

KIC 009393006

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009393006-01	OBS	No	1.321269	132.535802	44.6	4.893	7.7	7.4	1.00	5780	0.66	1800.05
009393006-02	OBS	No	3.487834	132.373899	207.6	13.803	8.5	10.6	1.00	5780	2.11	493.40
009393006-03	OBS	No	149.630074	187.157870	802.9	14.505	15.1	6.8	1.00	5780	3.83	3.29
009393006-05	OBS	No	54.467839	132.774777	456.6	6.422	9.2	7.6	1.00	5780	2.23	12.64
009393006-06	OBS	No	78.059390	201.477510	632.6	5.368	9.7	8.0	1.00	5780	2.61	7.82
009393006-07	OBS	No	21.026194	140.546359	258.2	11.345	8.2	6.7	1.00	5780	1.74	44.97

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009393006-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_KIC_POS
009393006-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

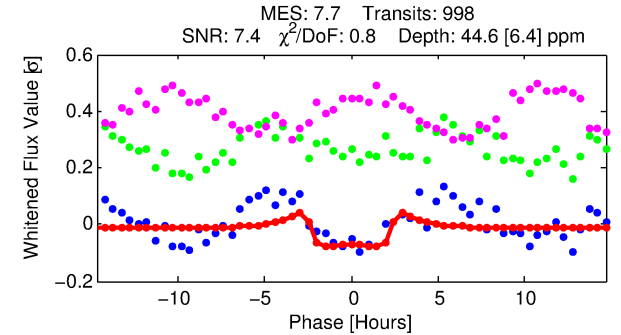
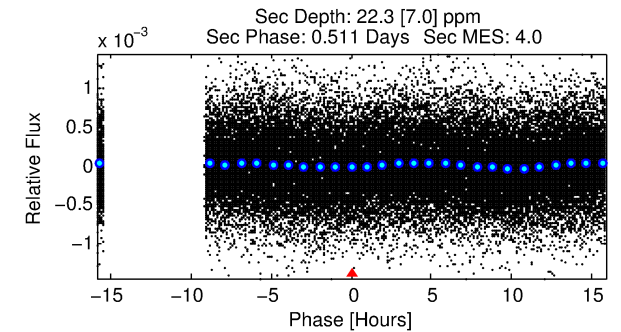
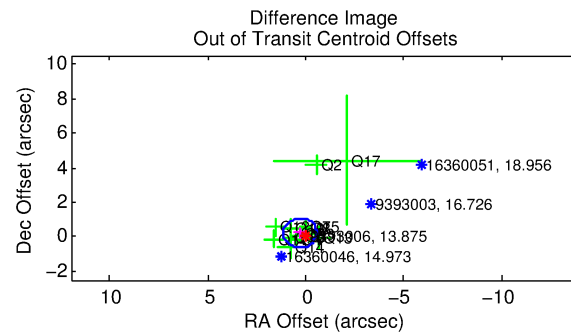
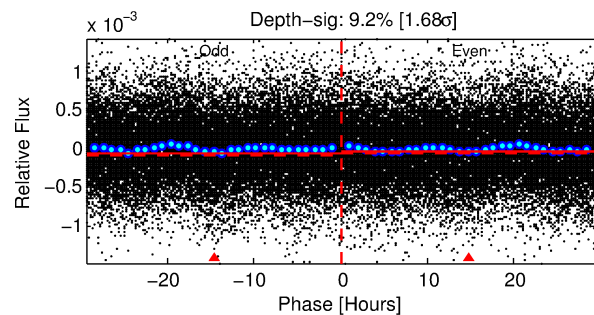
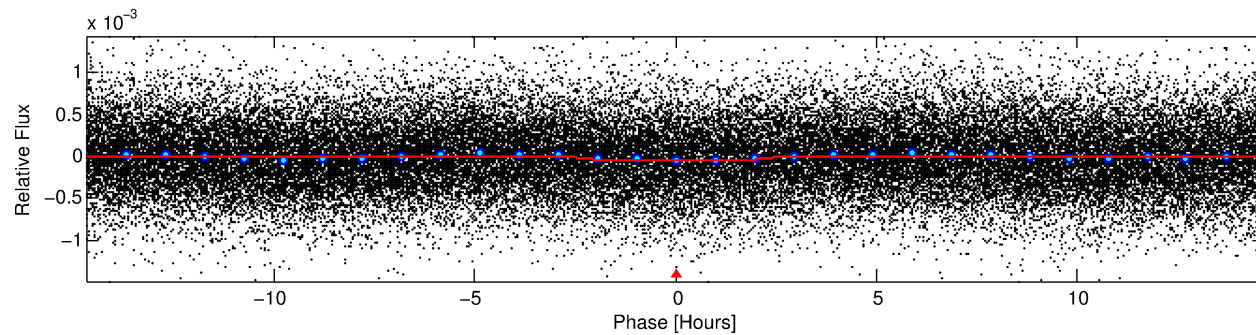
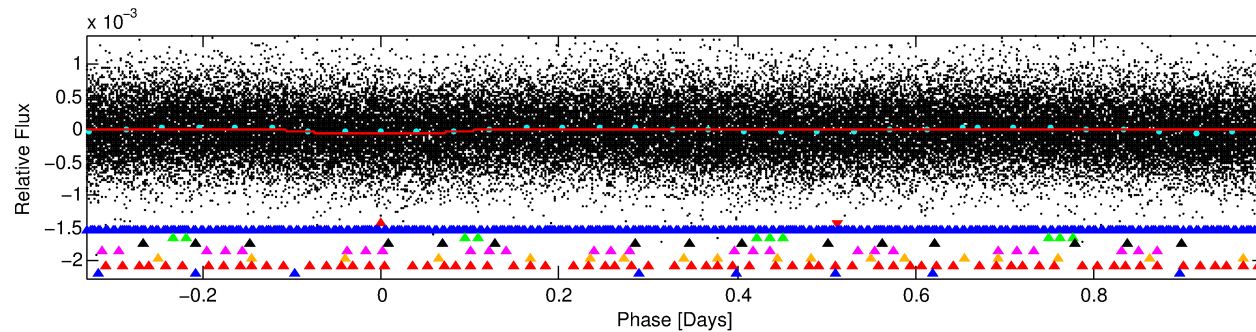
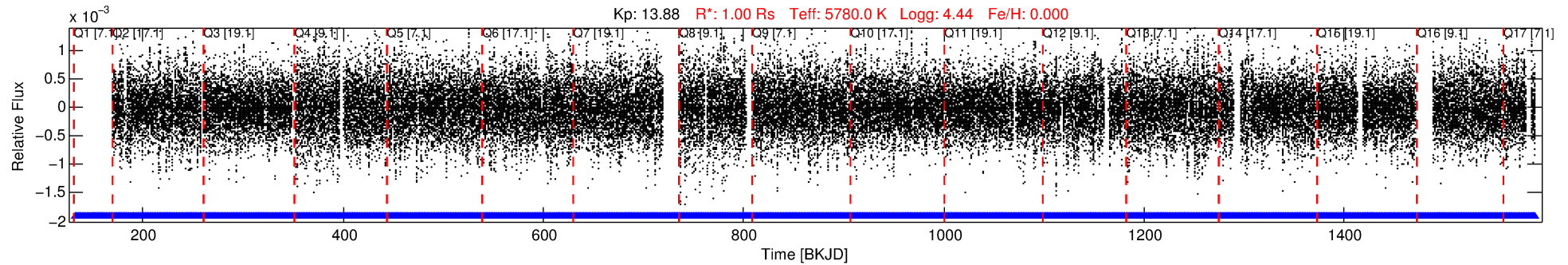
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009393006-01

No Significant Match Found

DV One-Page Summary

KIC: 9393006 Candidate: 1 of 8 Period: 1.321 d



DV Fit Results:

Period = 1.32127 [0.00002] d
Epoch = 132.5358 [0.0044] BKJD
Rp/R* = 0.0061 [0.0086]
a/R* = 2.16 [10.65]
b = 0.00 [1725.27]
Seff = 1800.05 [0.03]
Teff = 1661 [0] K
Rp = 0.66 [0.94] Re
a = 0.0236 [0.0000] AU
Ag = 15.61 [44.77] [0.33 σ]
Teffp = 5104 [3659] K [0.94 σ]

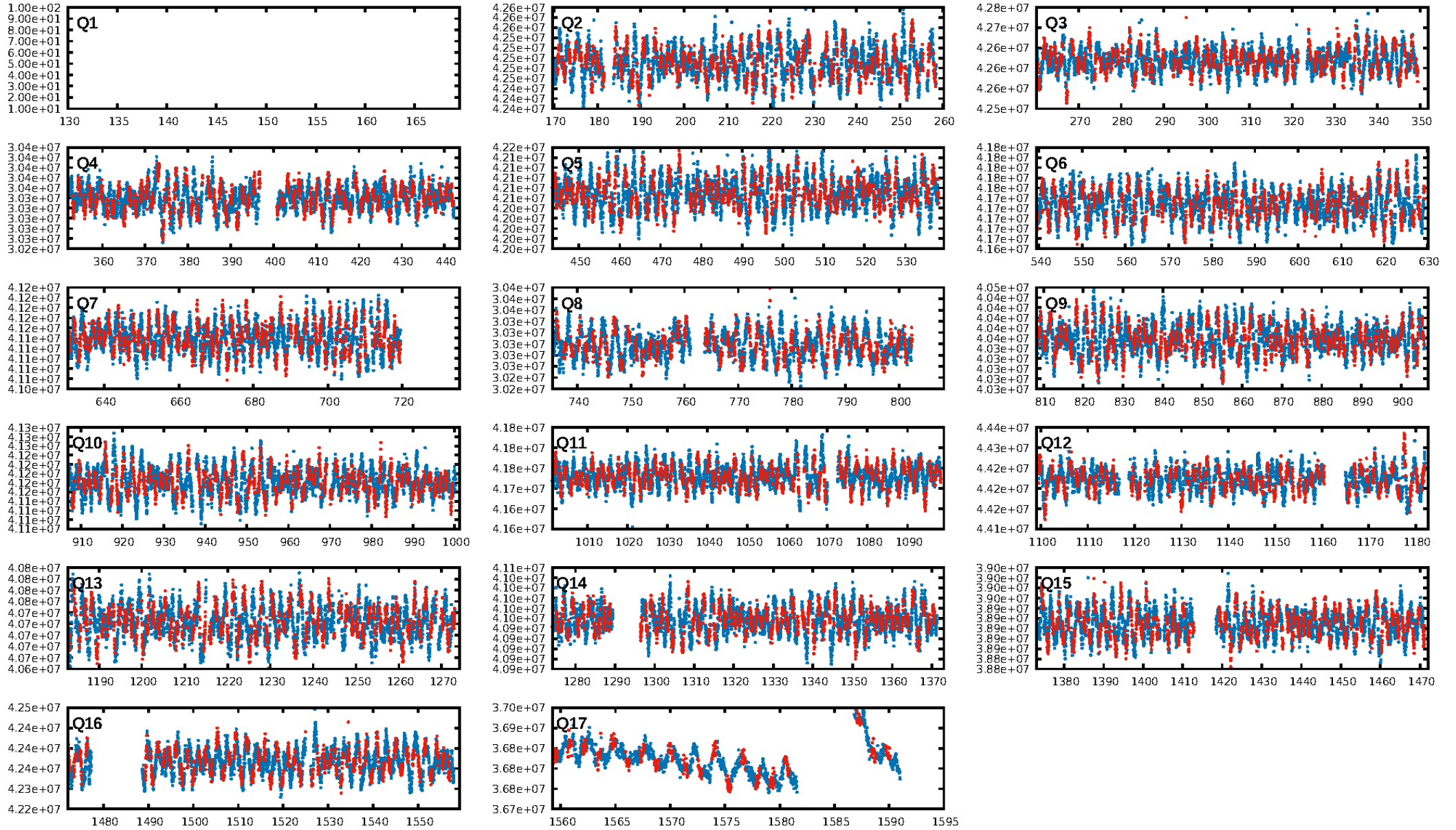
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [3.55 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.31e-08
RollingBand-fgt: 1.00 [978/978]
GhostDiagnostic-chr: 1.522
Centroid-sig: N/A
Centroid-so: 1.574 arcsec [1.90 σ]
OotOffset-rm: 0.364 arcsec [1.30 σ]
KicOffset-rm: 1.724 arcsec [4.84 σ]
OotOffset-st: 4/4/4/3 [15]
KicOffset-st: 4/4/4/3 [15]
DiffImageQuality-fgm: 0.87 [13/15]
DiffImageOverlap-fno: 1.00 [16/16]

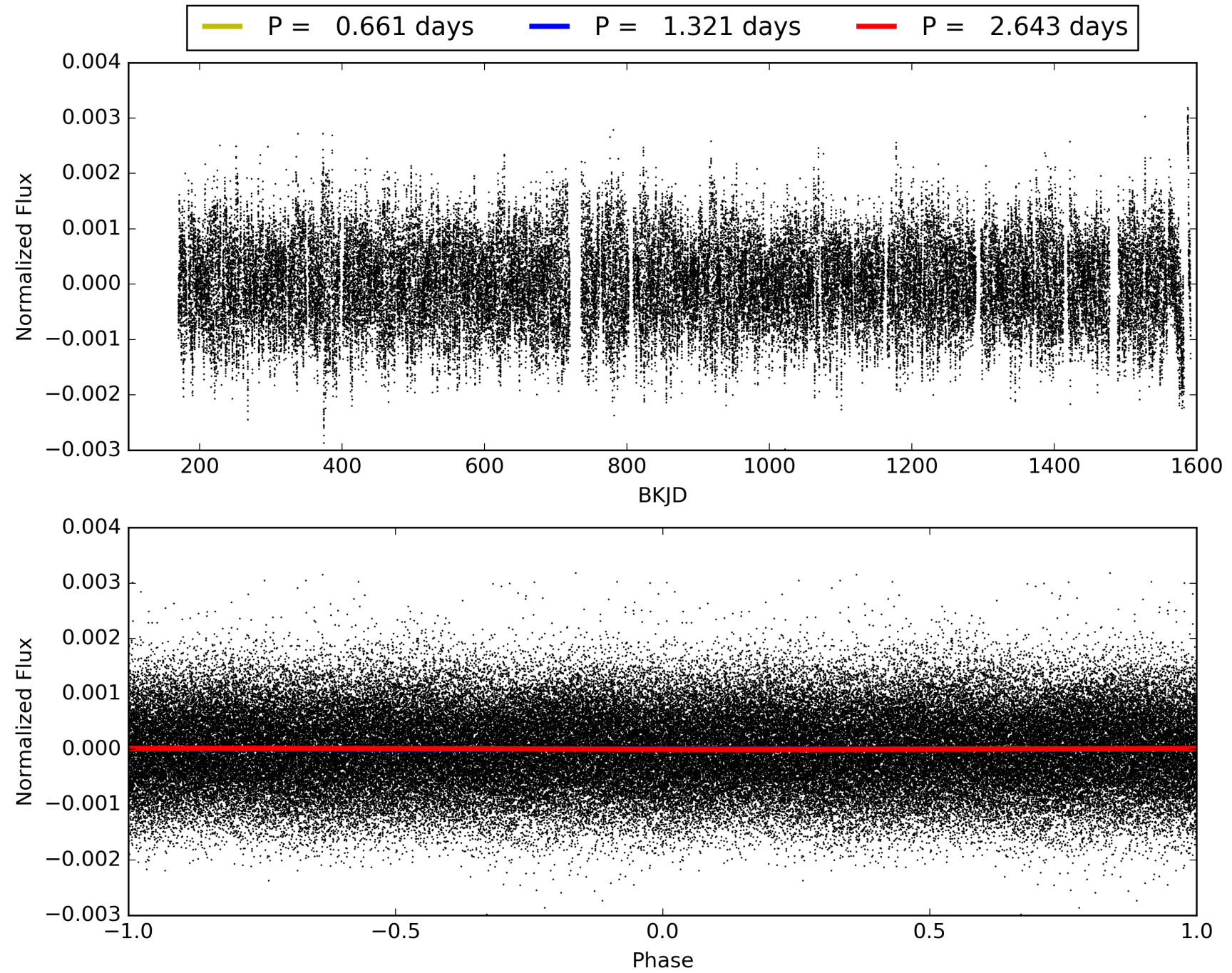
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009393006-01, PDC Light Curves

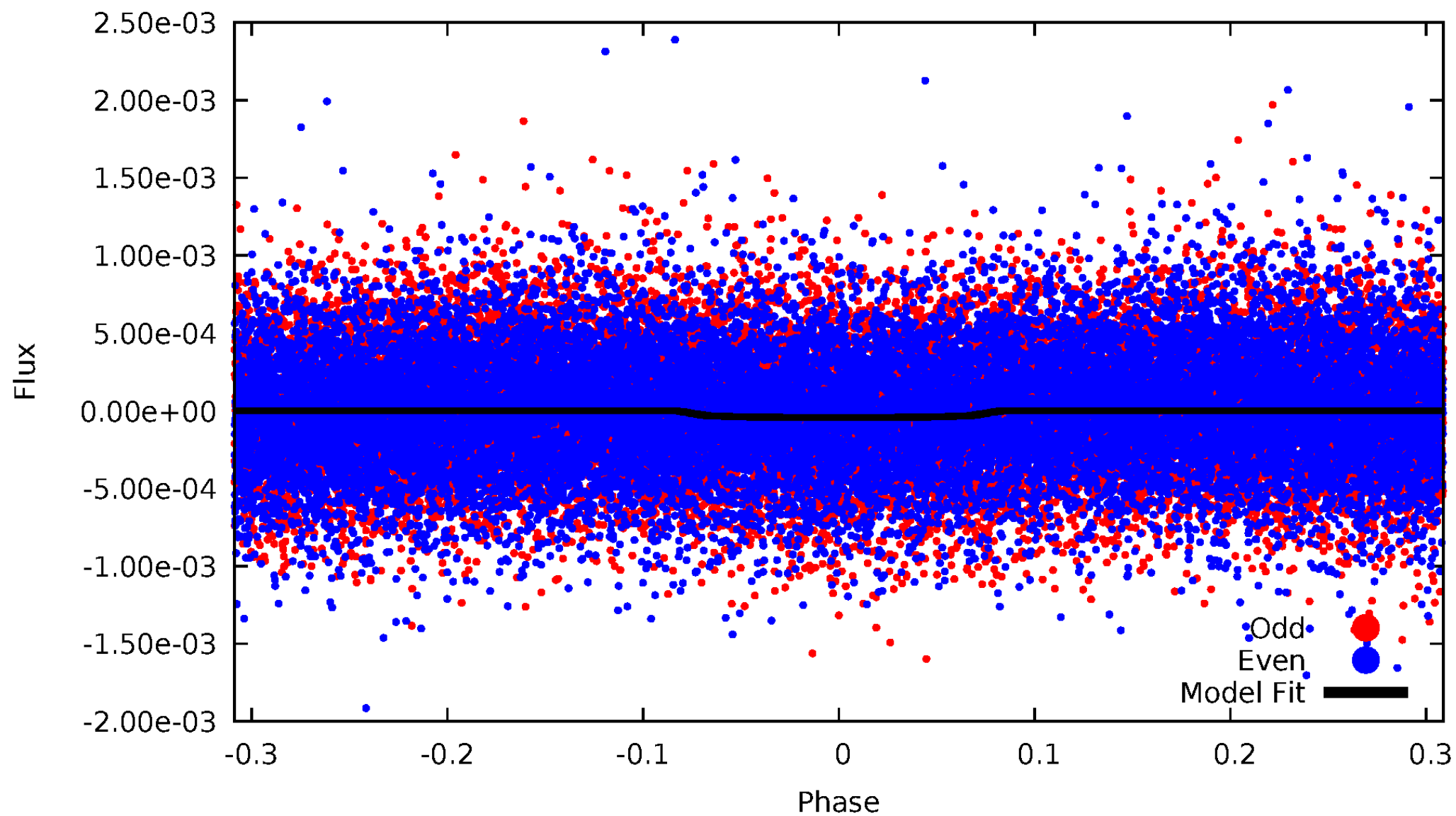


TCE 009393006-01



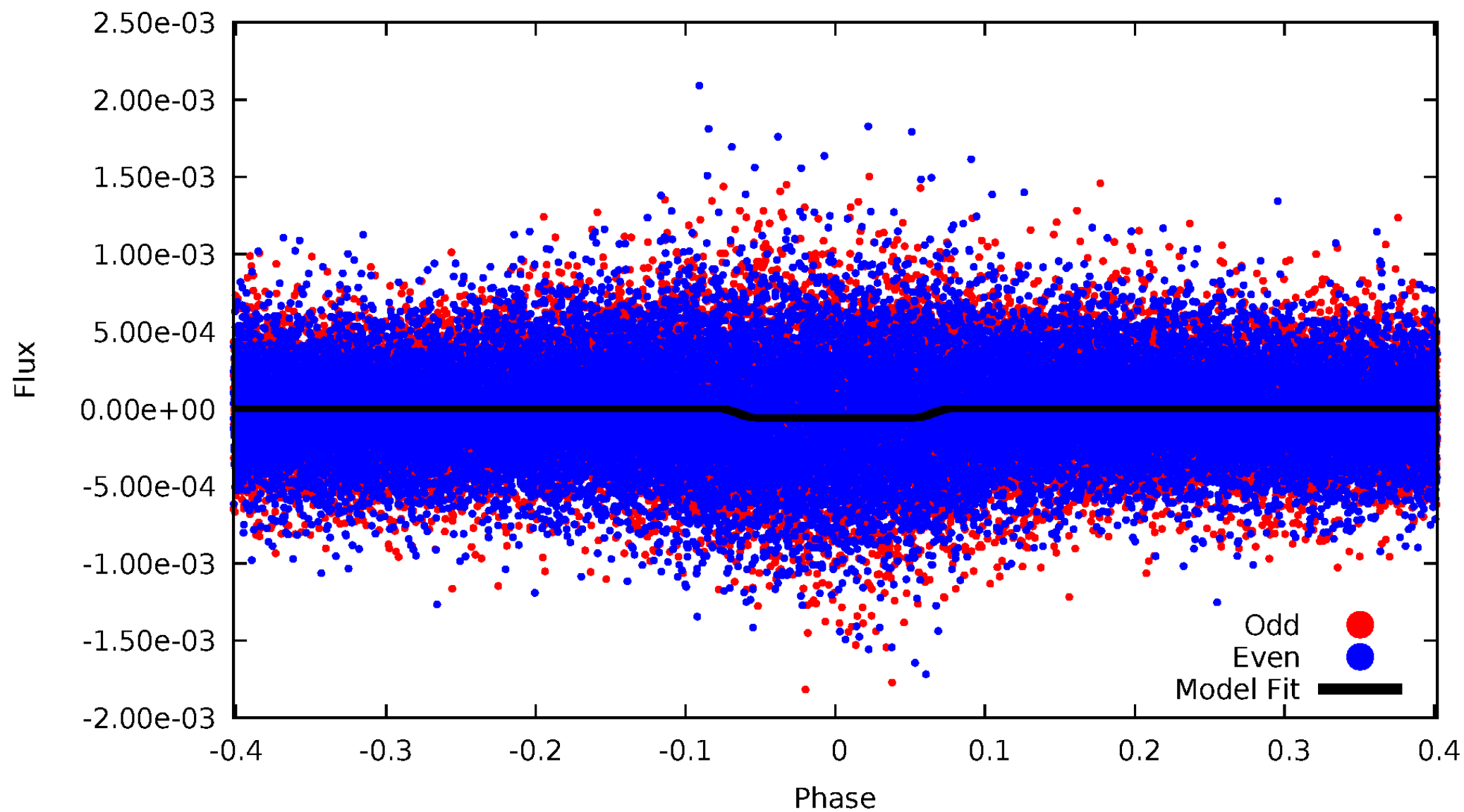
DV Odd/Even

TCE 009393006-01

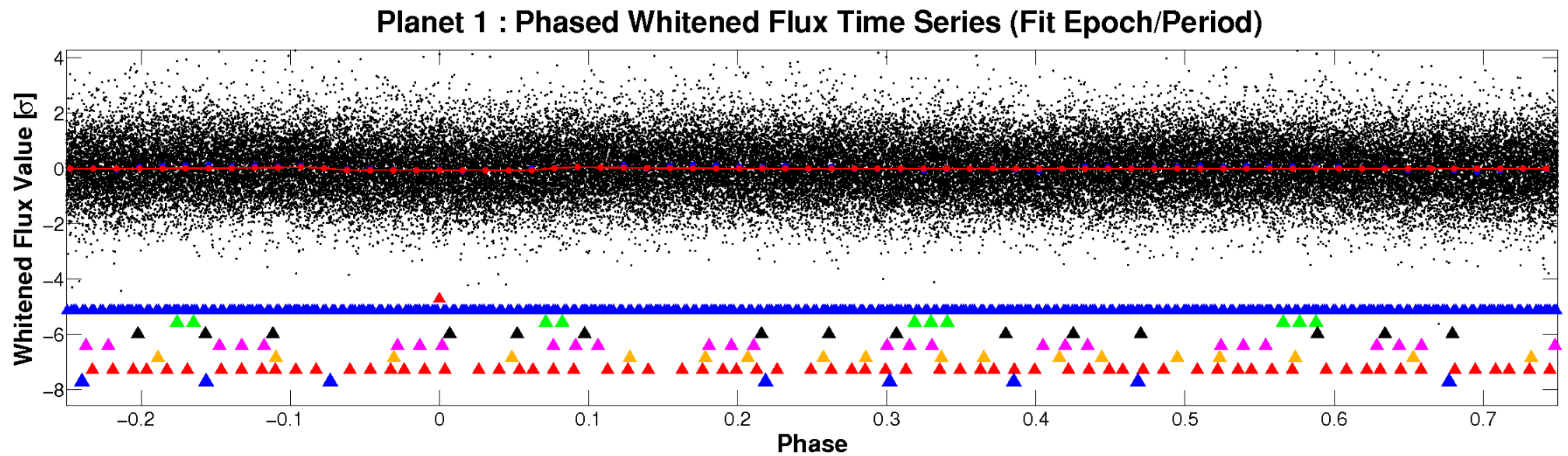
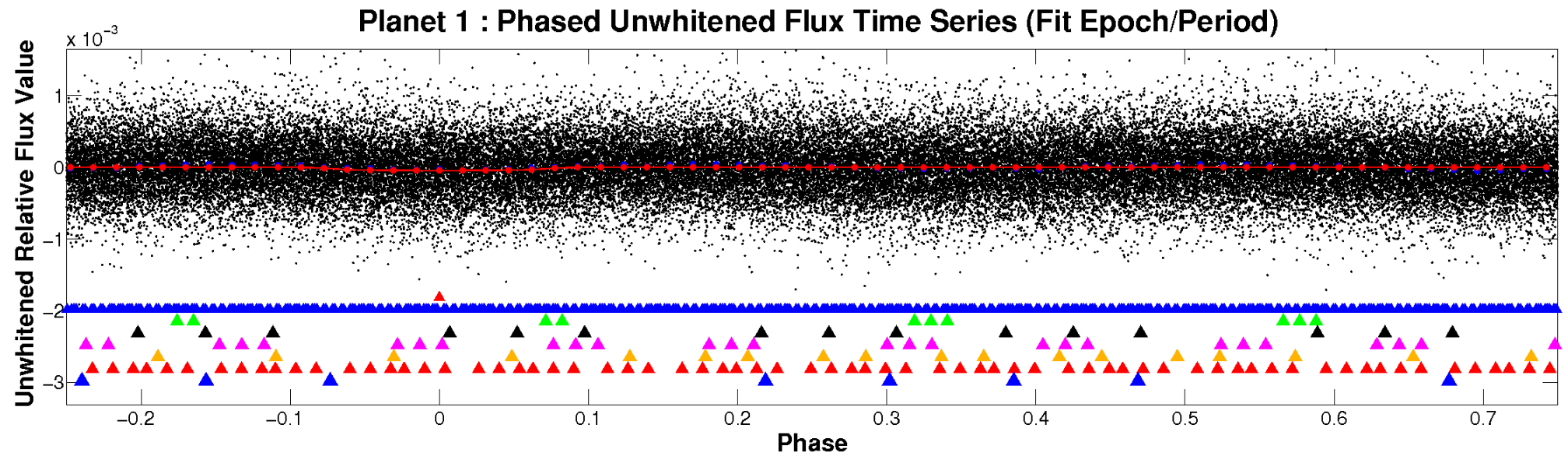


ALT Odd/Even

TCE 009393006-01

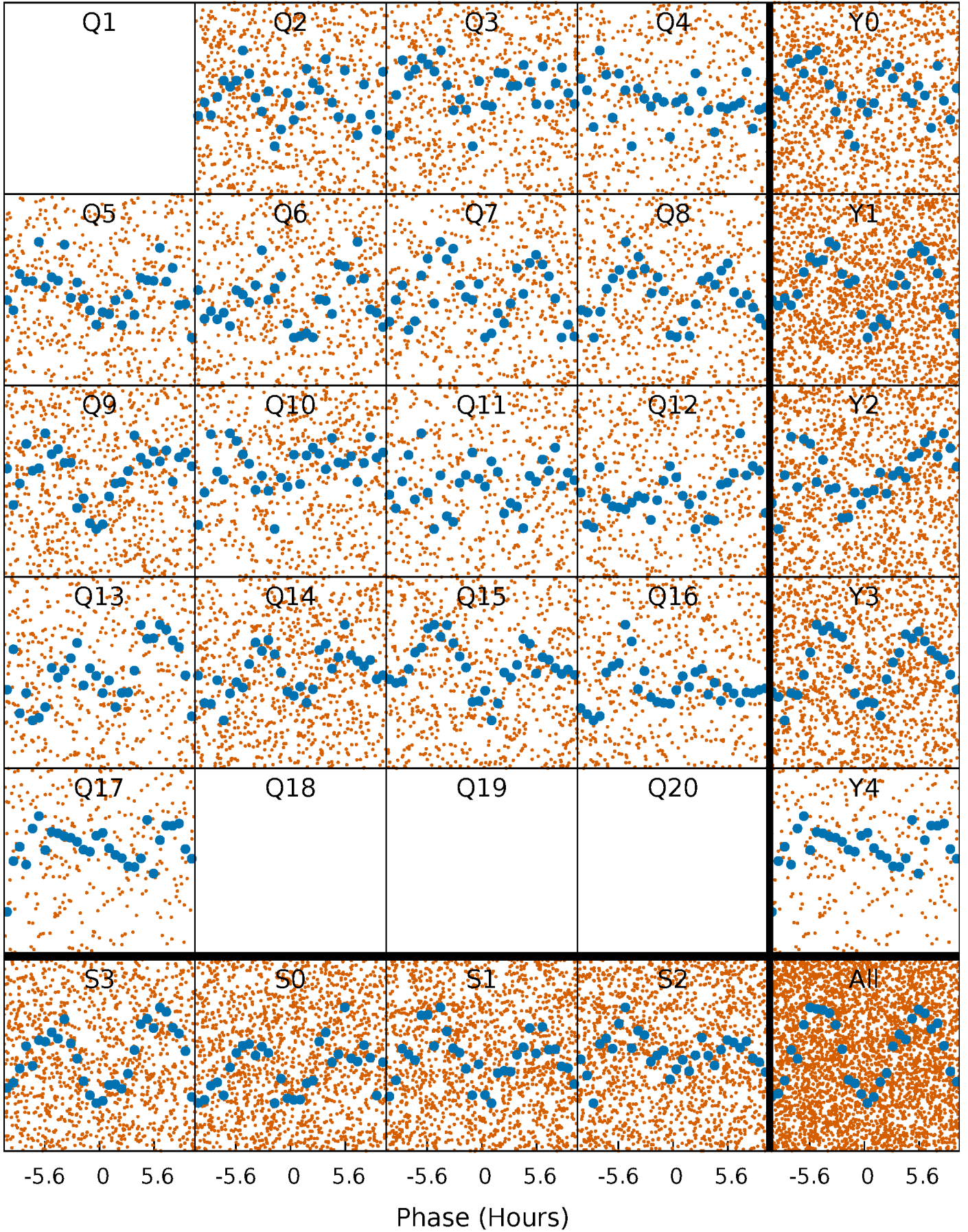


Non-Whitened Vs. Whitened Light Curve



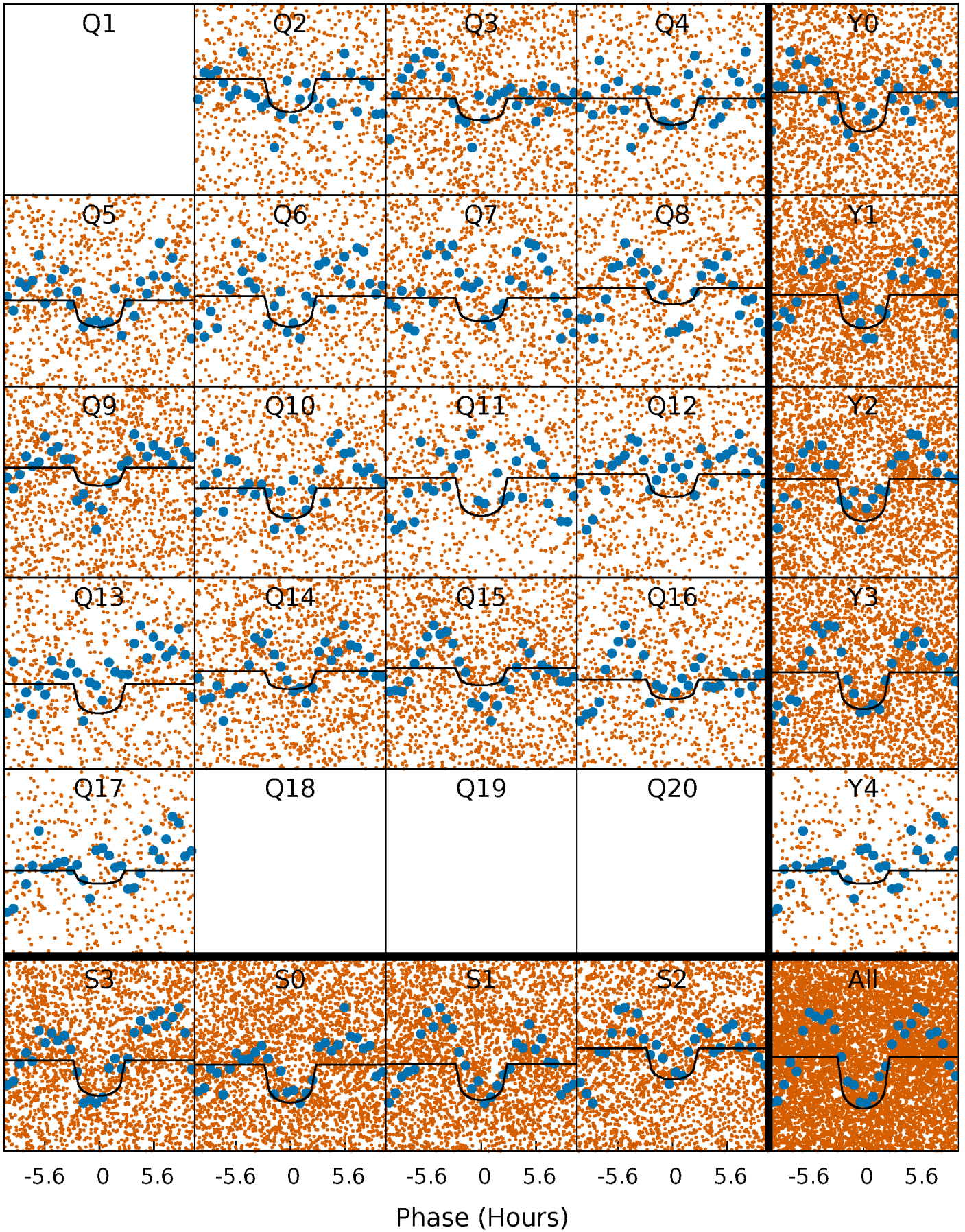
PDC Quarter-Phased Transit Curves

TCE 009393006-01 P= 1.321269 Days $T_0=132.535802$ (BKJD)



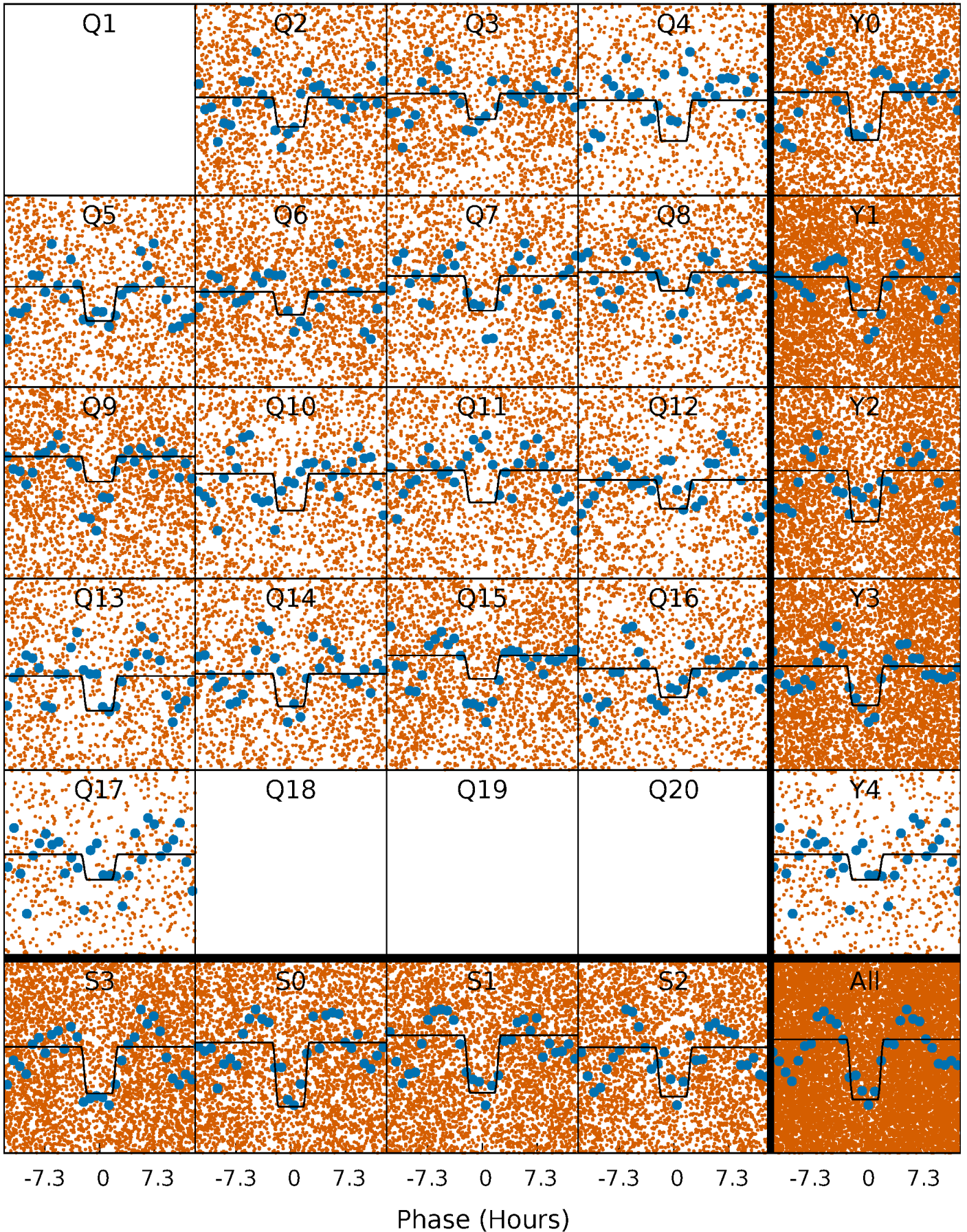
DV Quarter-Phased Transit Curves

TCE 009393006-01 P= 1.321269 Days $T_0=132.535802$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

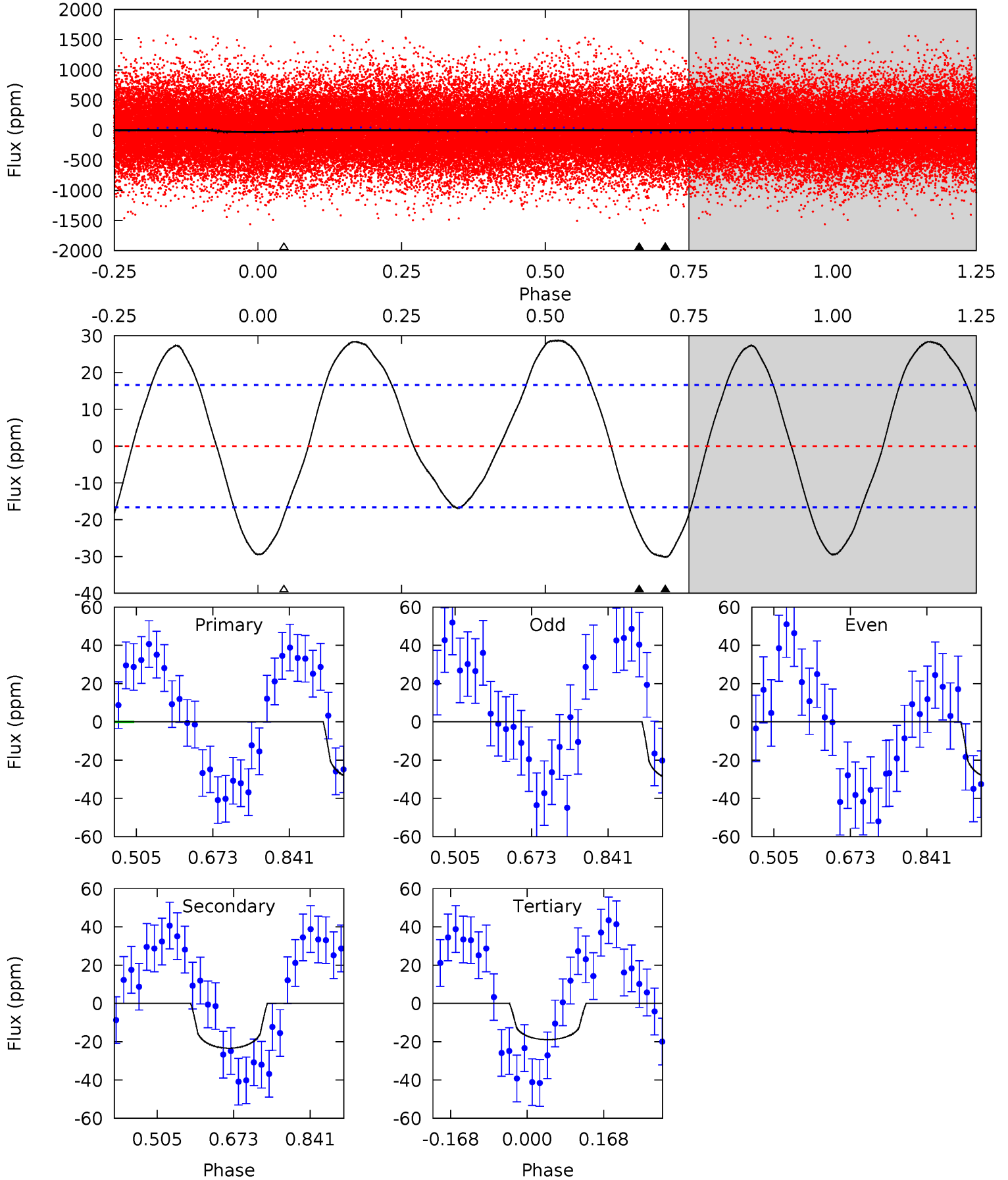
TCE 009393006-01 P= 1.321303 Days $T_0=132.528352$ (BKJD)



DV Model-Shift Uniqueness Test

009393006-01, P = 1.321269 Days, E = 132.535802 Days

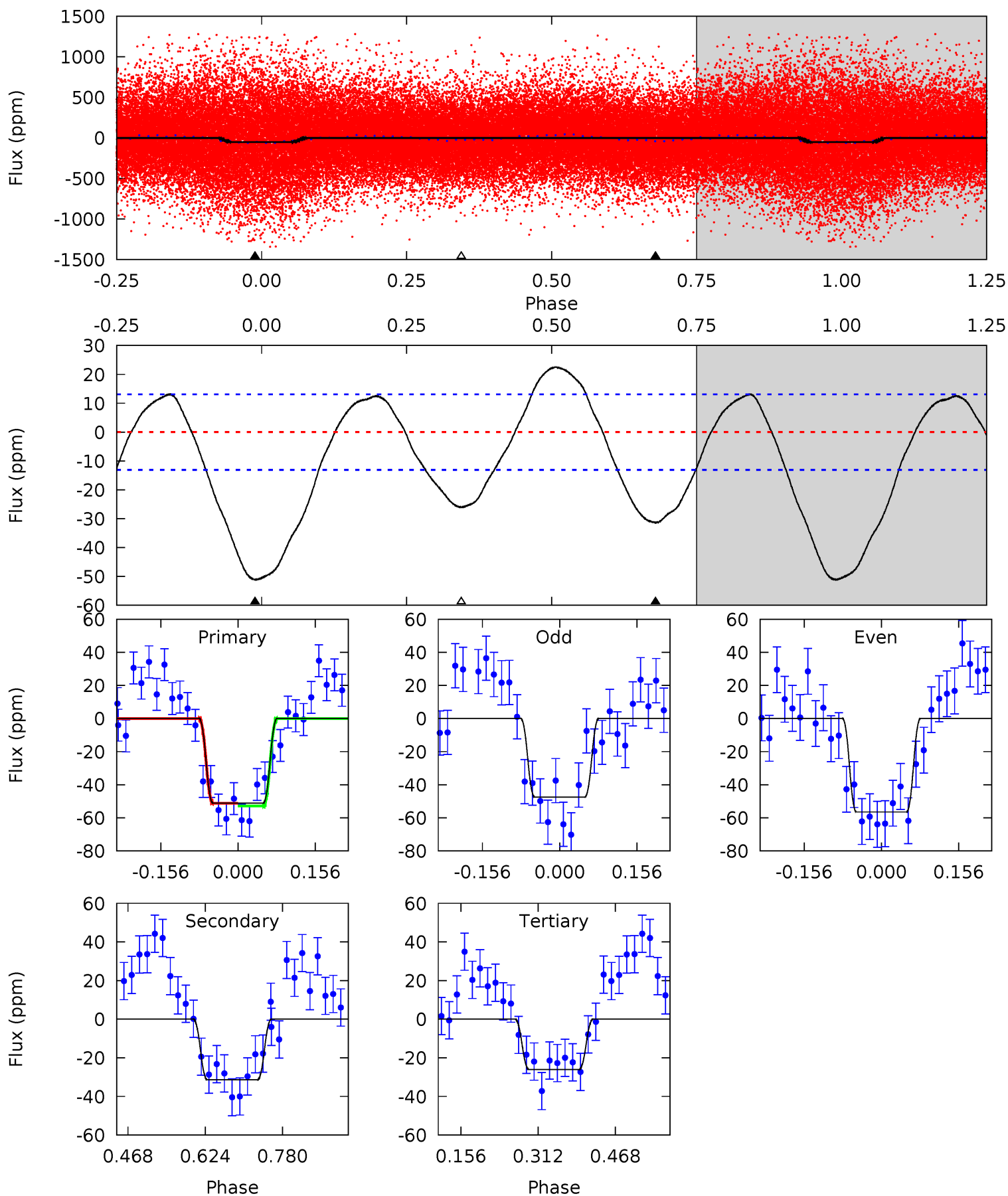
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.08	6.26	5.06	0	4.45	1.38	4.67	3.02	8.08	1.20	6.26	0.08	1.18	0.49	0.39



Alt Model-Shift Uniqueness Test

009393006-01, P = 1.321303 Days, E = 132.528352 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.4	10.7	8.87	0	4.47	1.42	5.34	8.57	17.4	1.83	10.7	1.53	1.28	0.30	0.29



Stellar Parameters For KIC 009393006

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009393006-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-23 ± 4	$0.95^{+0.82}_{-0.62}$	2332^{+97}_{-102}	4468^{+2733}_{-981}	$7.654^{+53.054}_{-5.467}$
Alt.	-31 ± 3	$1.09^{+0.87}_{-0.74}$	2325^{+111}_{-116}	4455^{+3302}_{-861}	$7.979^{+69.191}_{-5.442}$

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
 A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

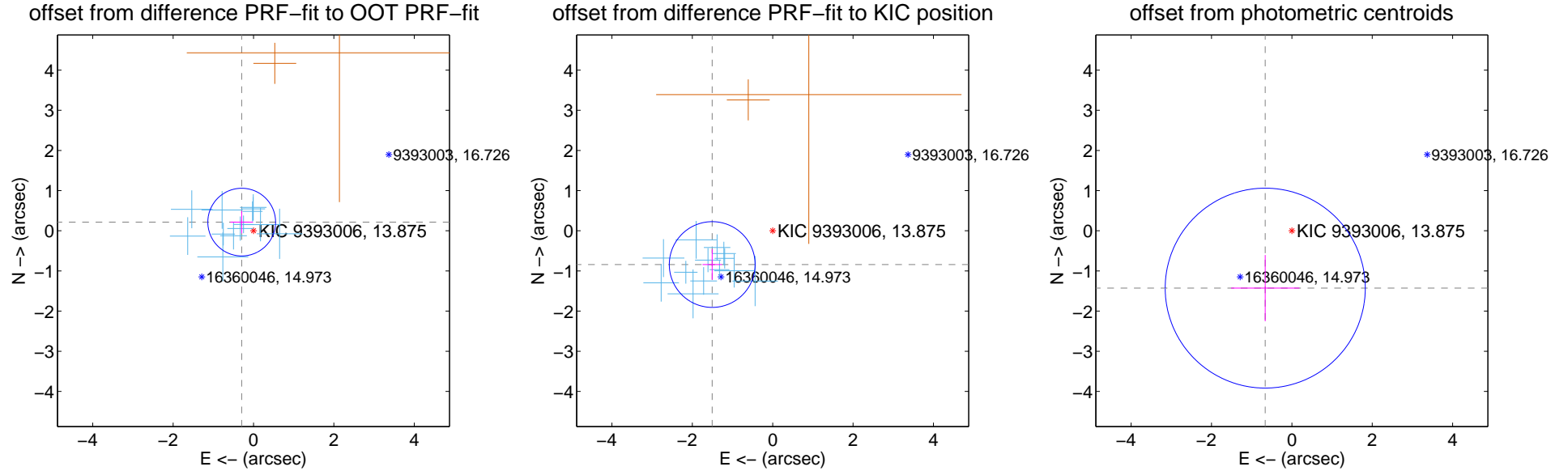
DV Centroid Data

Supplemental centroid analysis for 009393006-01. Kepler magnitude: 13.88. Transit SNR 7.36

There are 13 quarters with good PRF difference image offsets

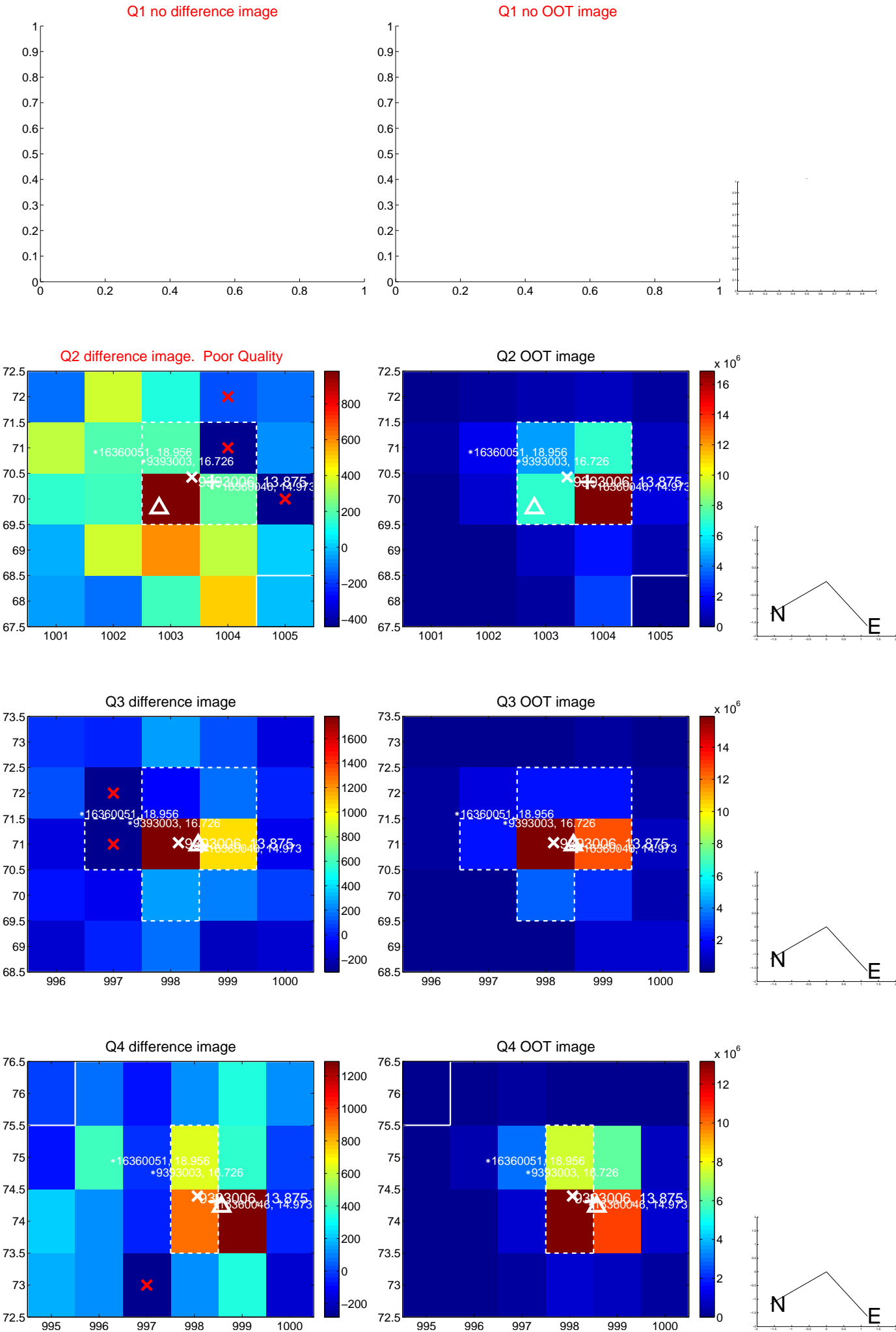
The direct PRF centroid is offset from the target star catalog position by about 1.62 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.364 ± 0.281	1.30	0.293 ± 0.283	0.216 ± 0.277
PRF-fit source offset from KIC position	1.724 ± 0.356	4.84	1.505 ± 0.241	-0.840 ± 0.380
photometric centroid source offset	1.57 ± 0.83	1.90	0.66 ± 0.85	-1.43 ± 0.83

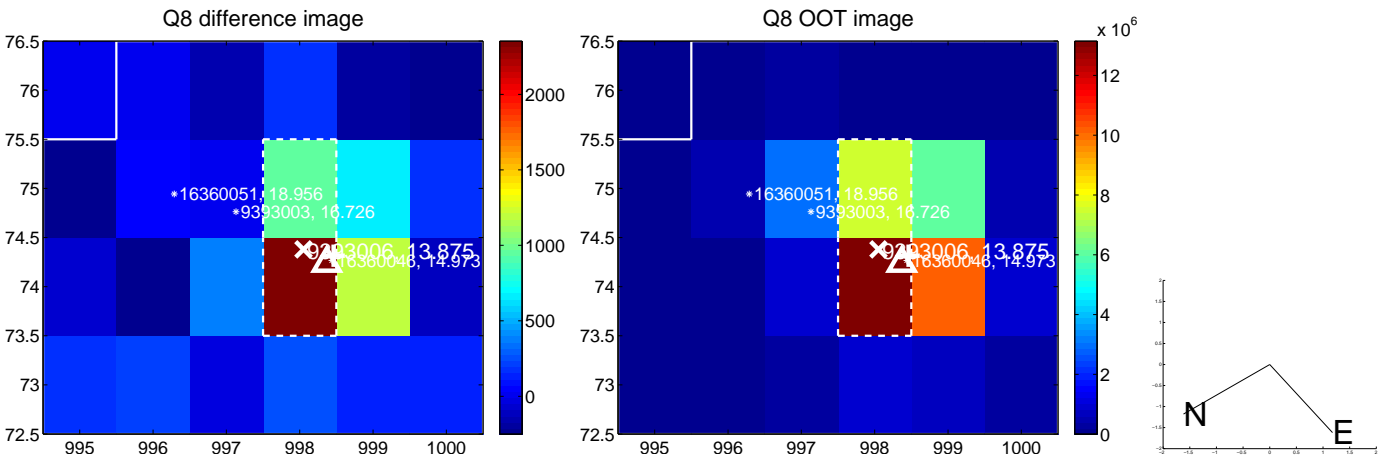
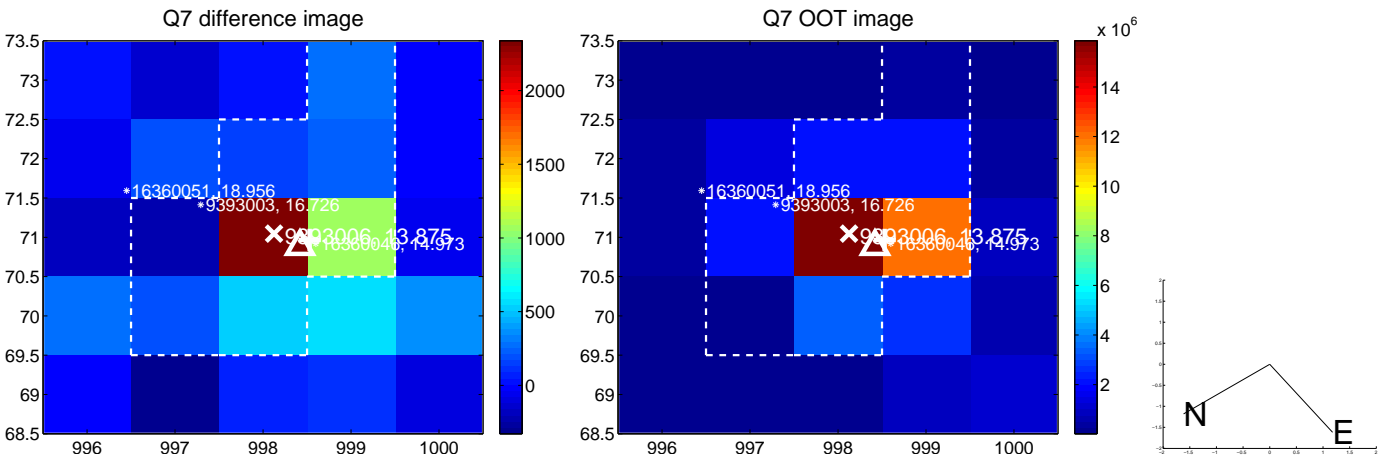
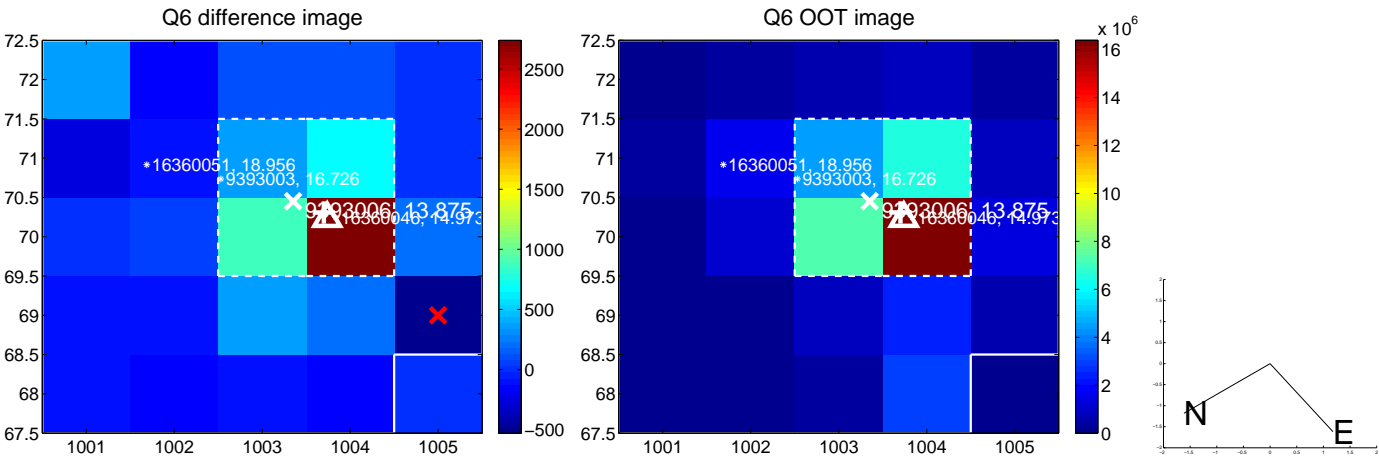
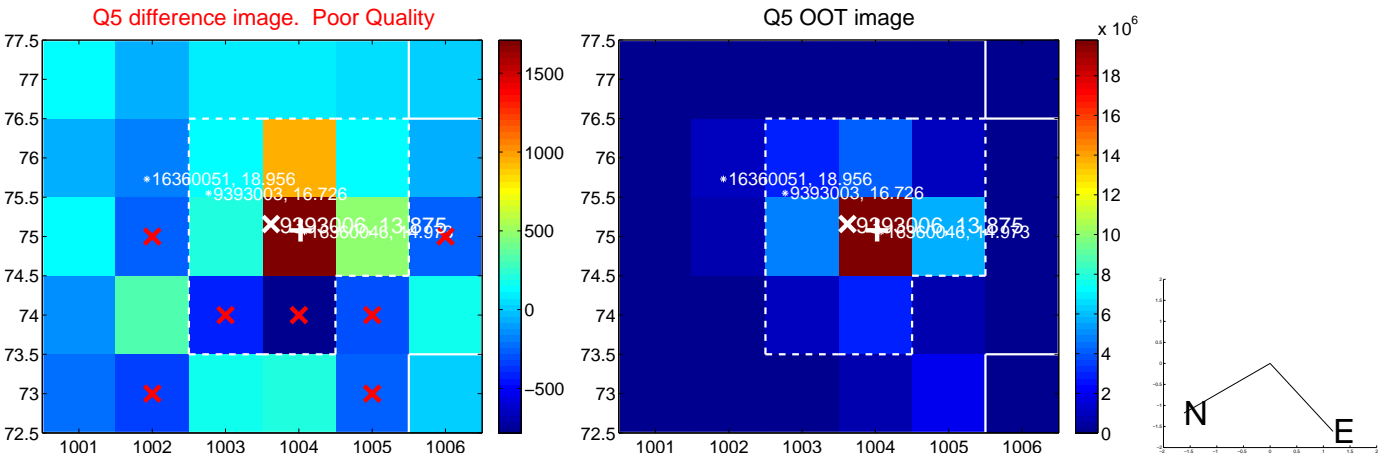


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

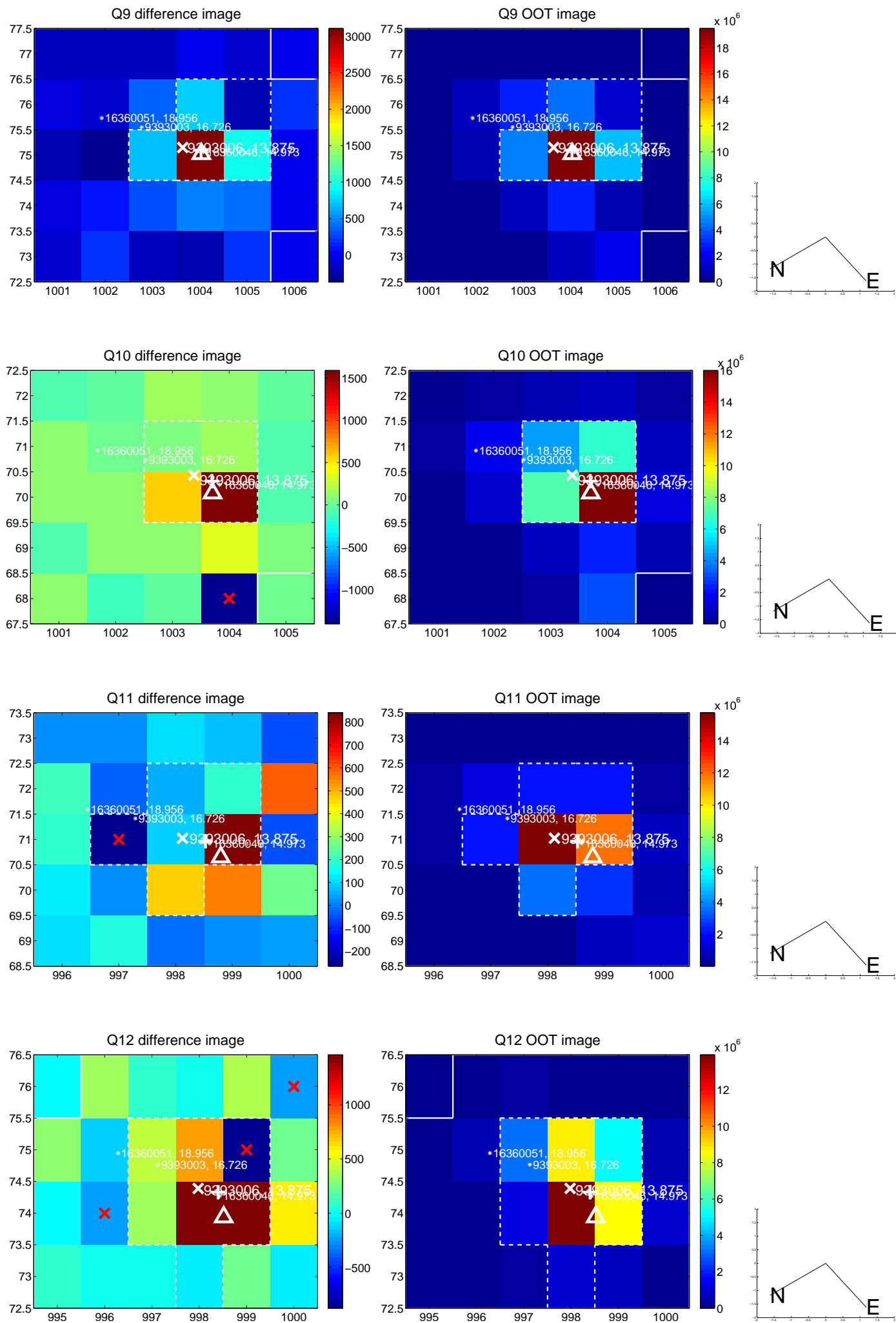
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



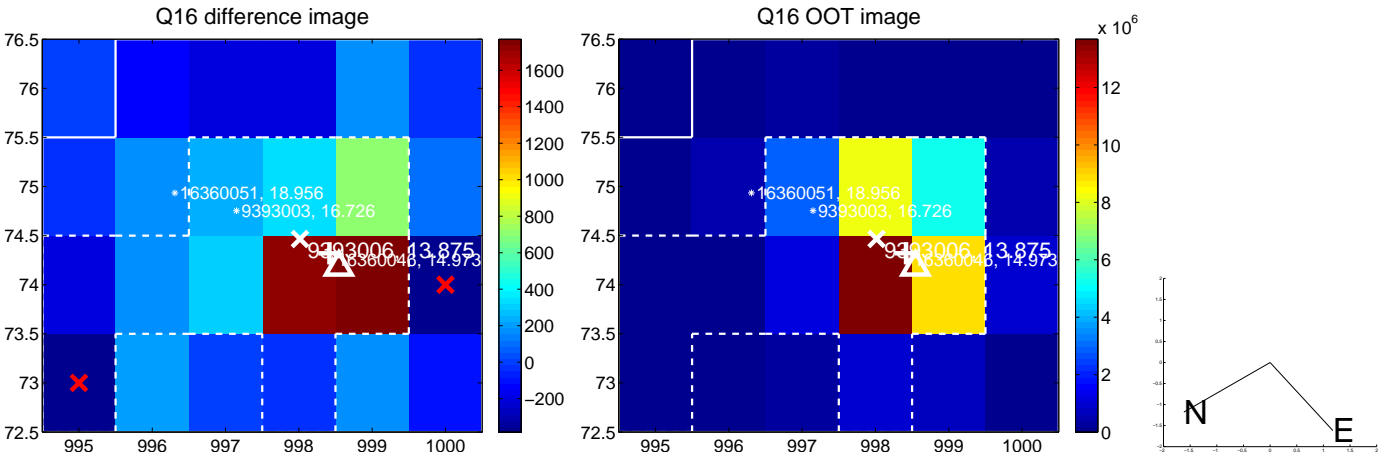
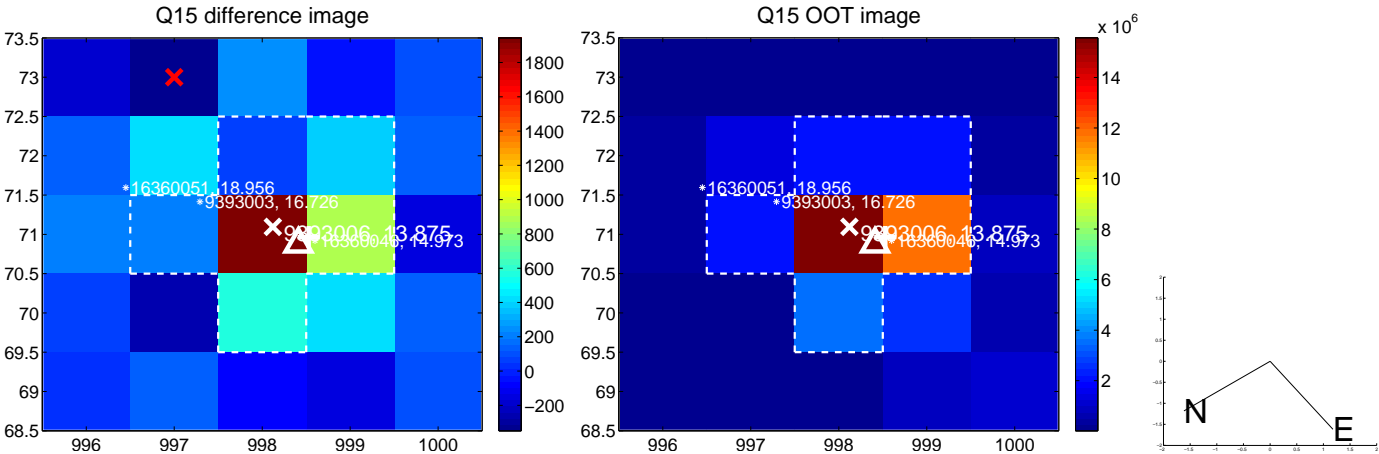
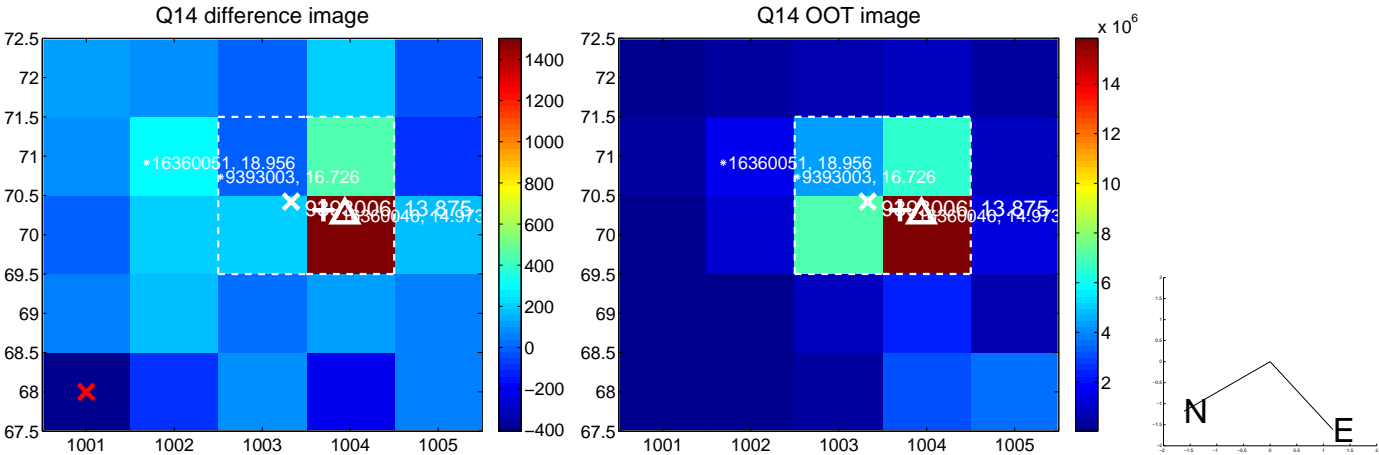
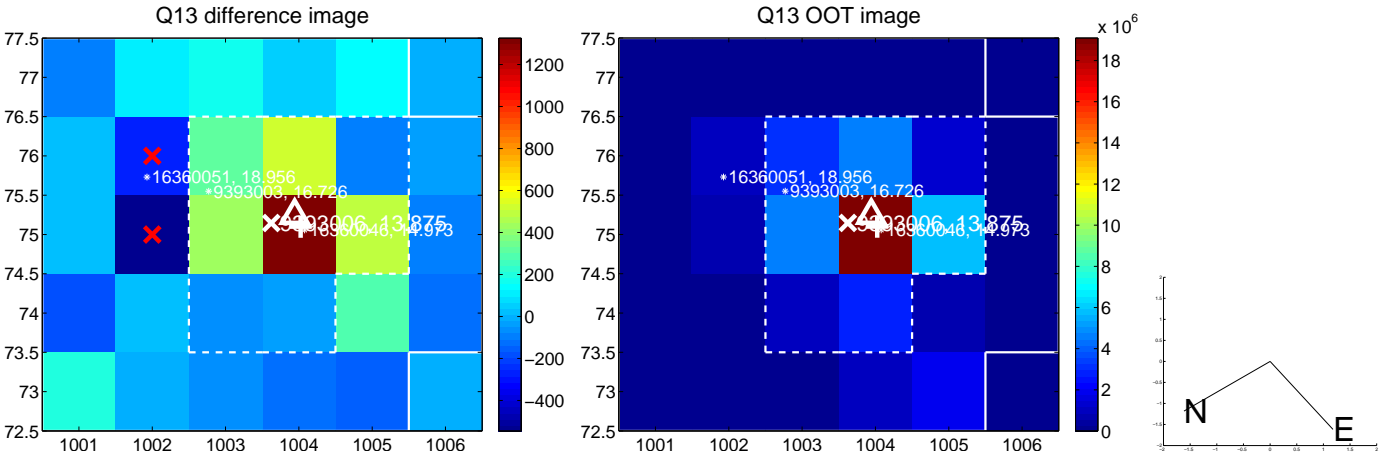
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



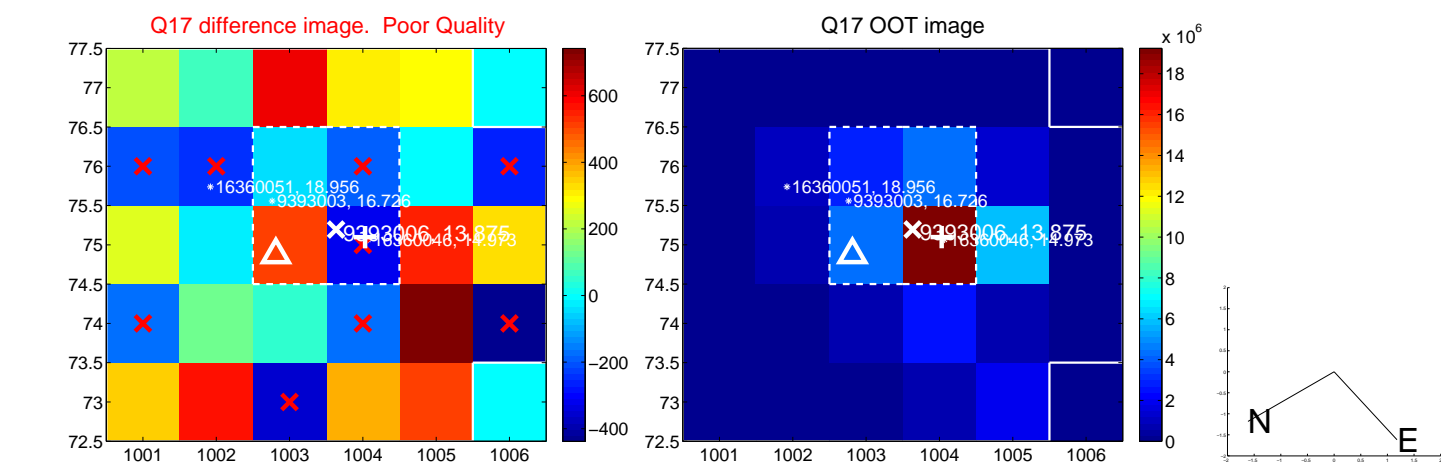
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



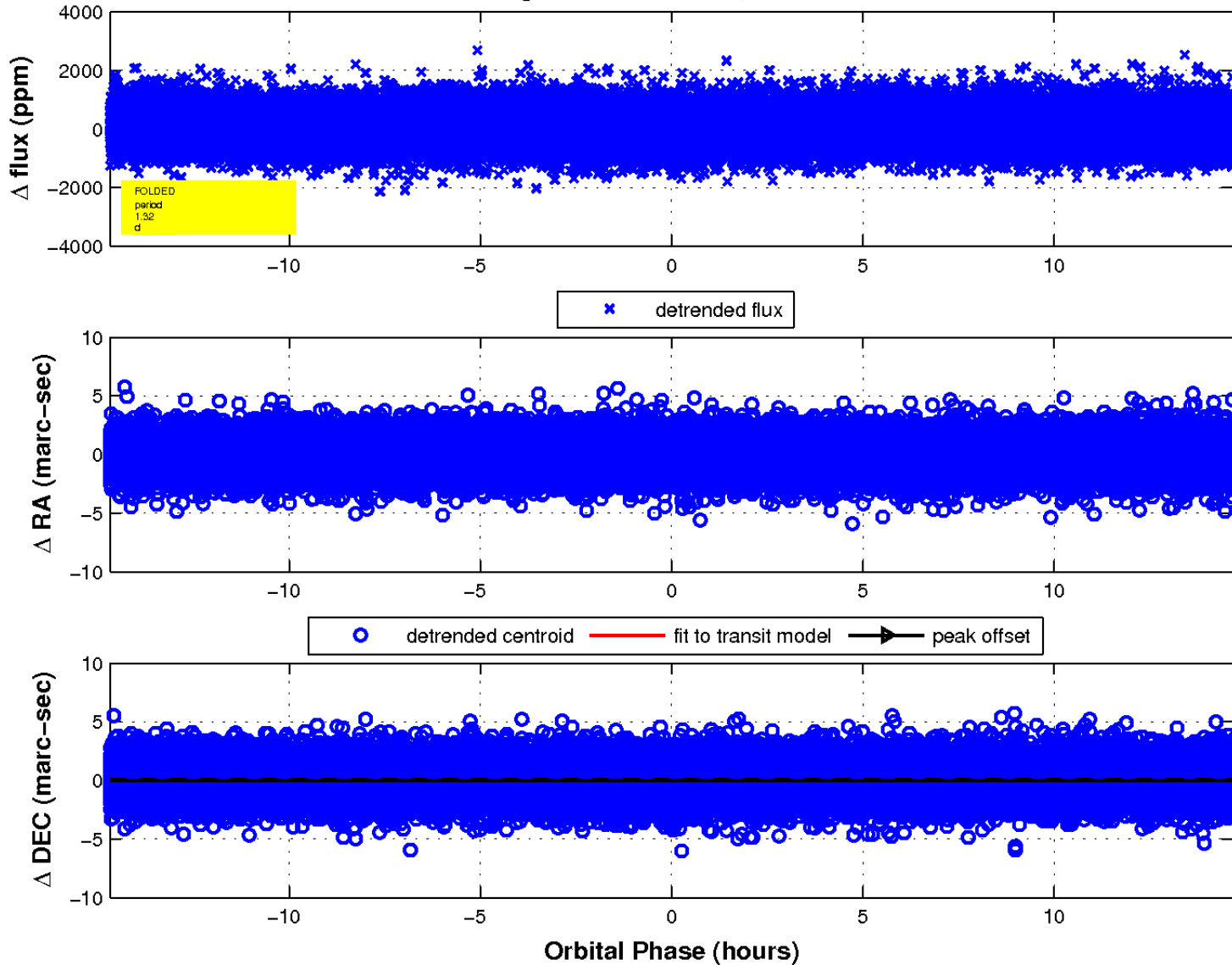
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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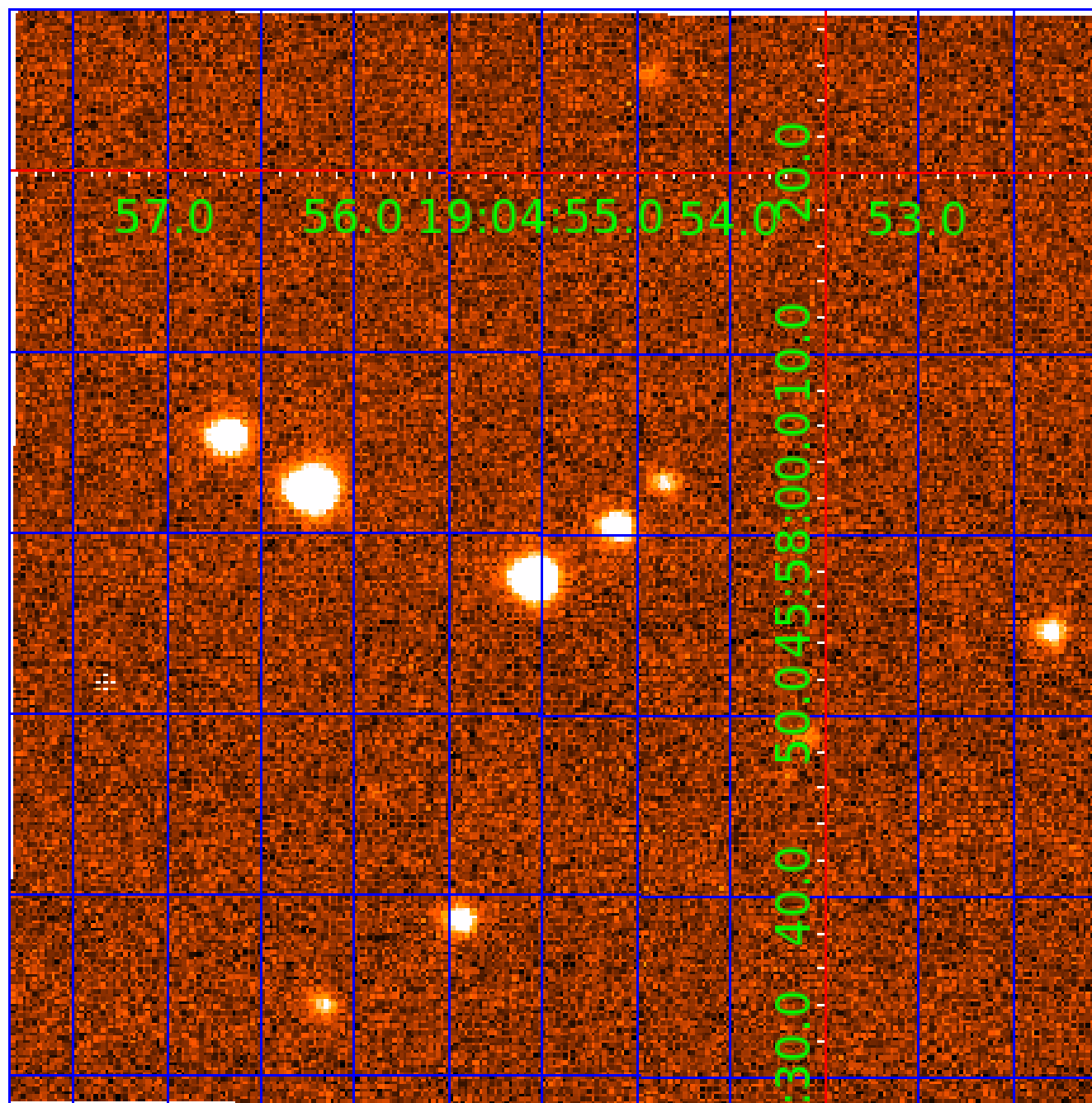


fluxWeightedCentroids, Planet 1 of 8



UKIRT Image

Declination



KIC 009393006

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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009393006-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_KIC_POS
009393006-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

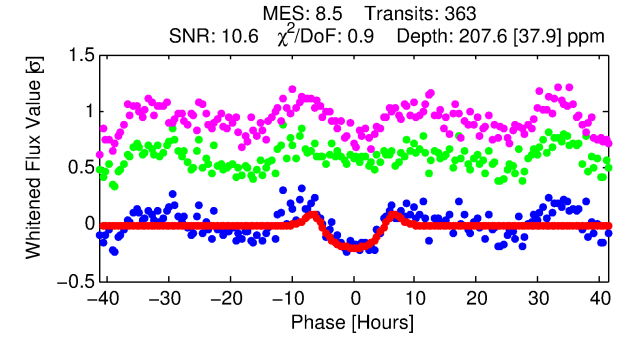
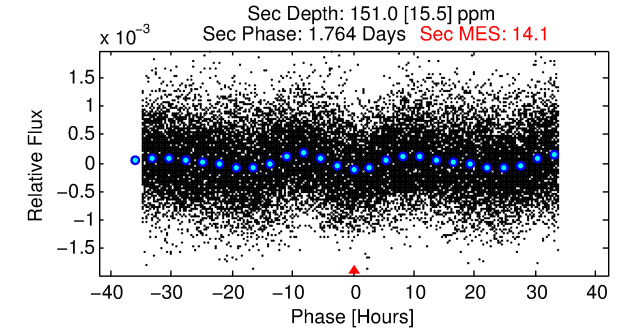
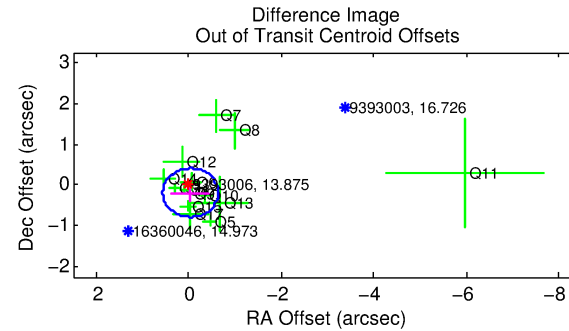
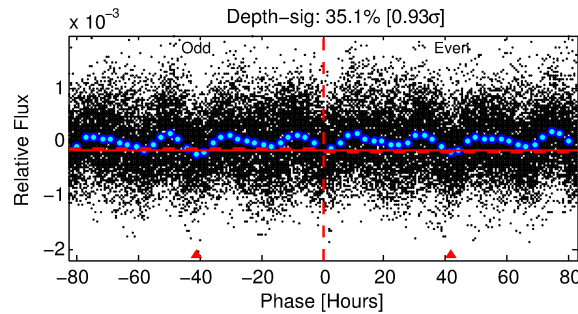
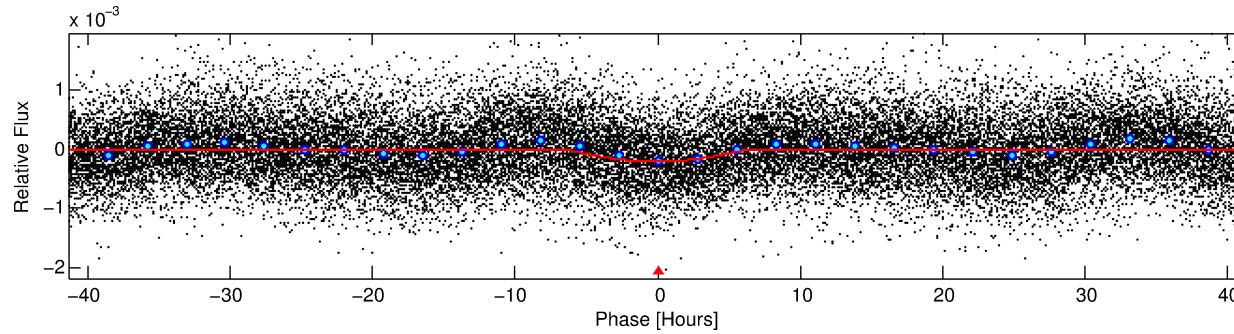
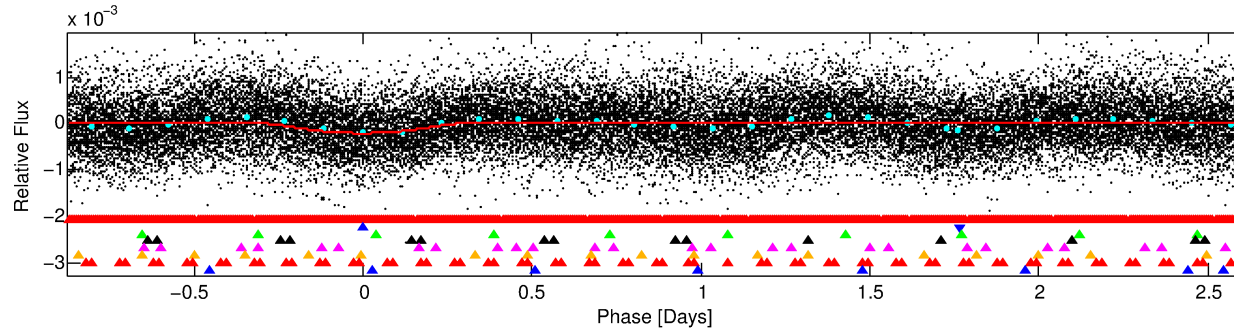
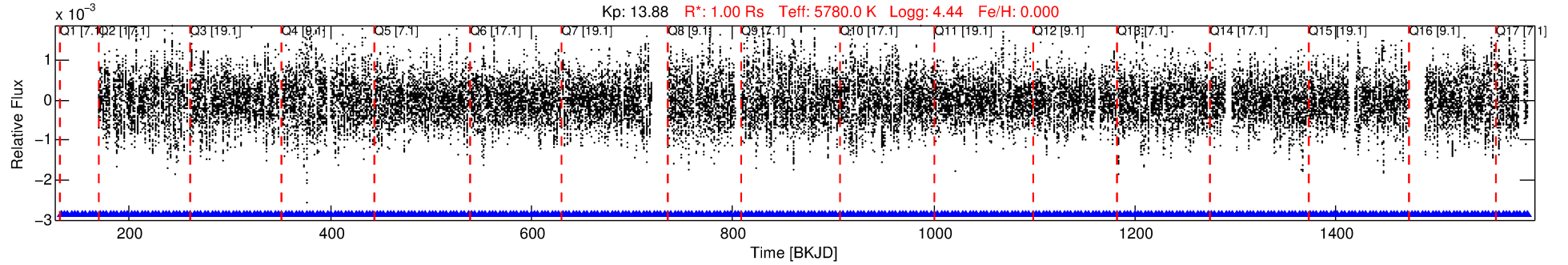
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009393006-02

No Significant Match Found

DV One-Page Summary

KIC: 9393006 Candidate: 2 of 8 Period: 3.488 d



DV Fit Results:

Period = 3.48783 [0.00008] d
Epoch = 132.3739 [0.0188] BKJD
 $R_p/R^* = 0.0193$ [0.0036]
 $a/R^* = 1.12$ [0.02]
 $b = 0.99$ [0.01]
 $\text{Seff} = 493.40$ [0.02]
 $T_{\text{eq}} = 1202$ [0] K
 $R_p = 2.11$ [0.40] R_e
 $a = 0.0450$ [0.0000] AU
 $A_g = 37.90$ [14.74] [2.50 σ]
 $T_{\text{eff}} = 4610$ [448] K [7.60 σ]

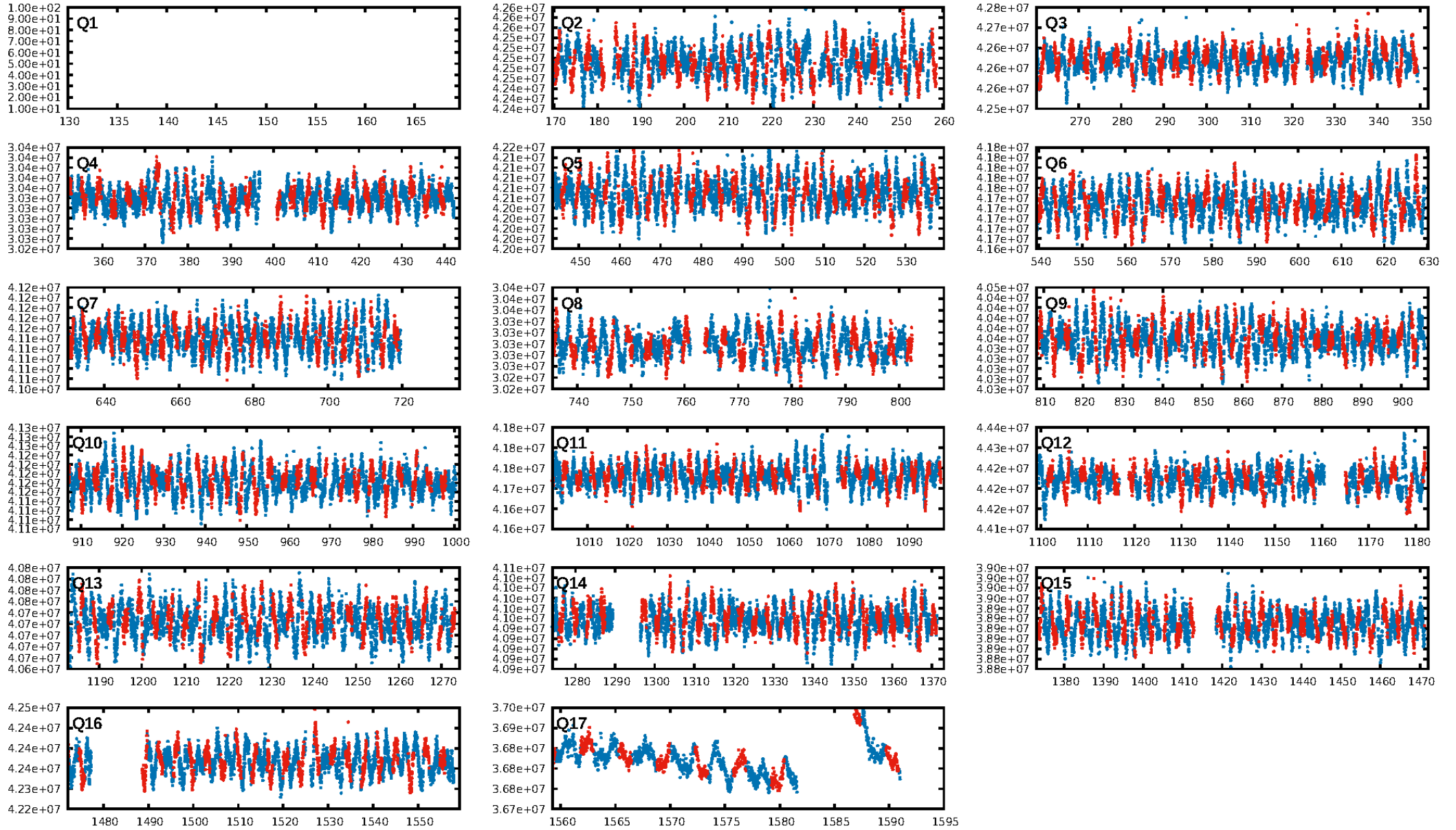
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [3.55 σ]
LongPeriod-sig: 100.0% [23.56 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.10e-08
RollingBand-fgt: 1.00 [355/355]
GhostDiagnostic-chr: -105.6
Centroid-sig: N/A
Centroid-so: 1.246 arcsec [5.03 σ]
OotOffset-rm: 0.191 arcsec [0.96 σ]
KicOffset-rm: 1.708 arcsec [5.13 σ]
OotOffset-st: 3/4/3/4 [14]
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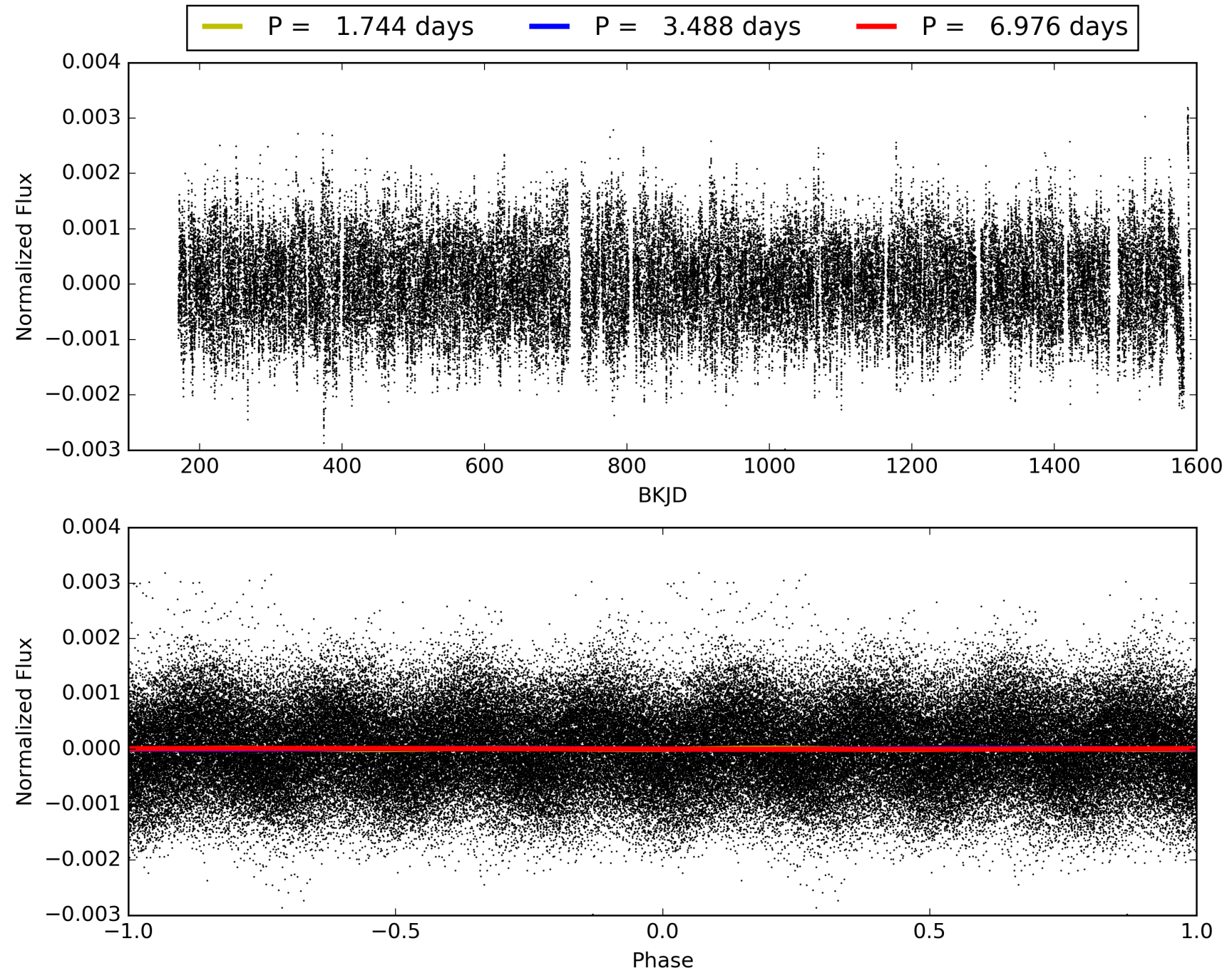
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009393006-02, PDC Light Curves

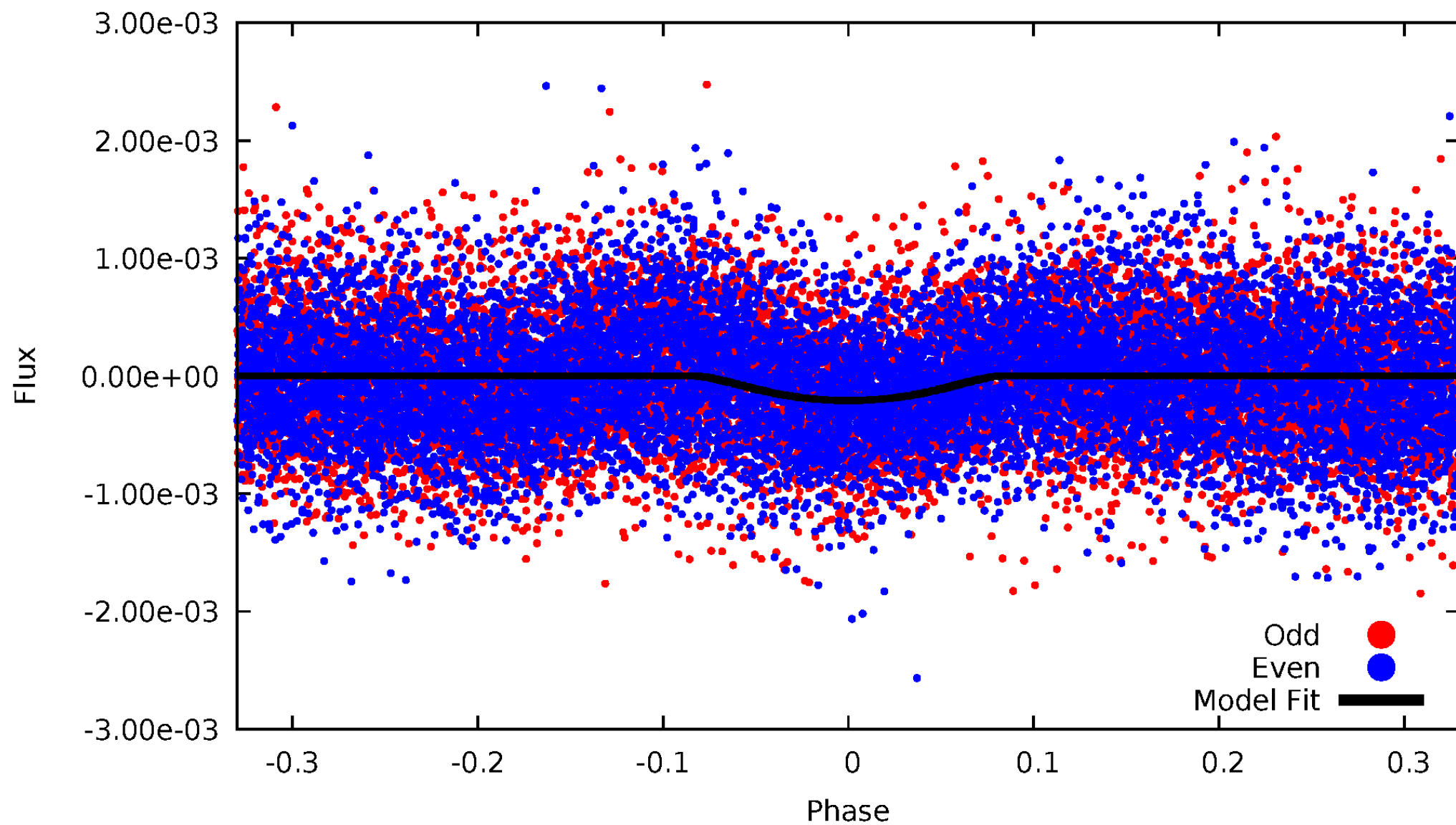


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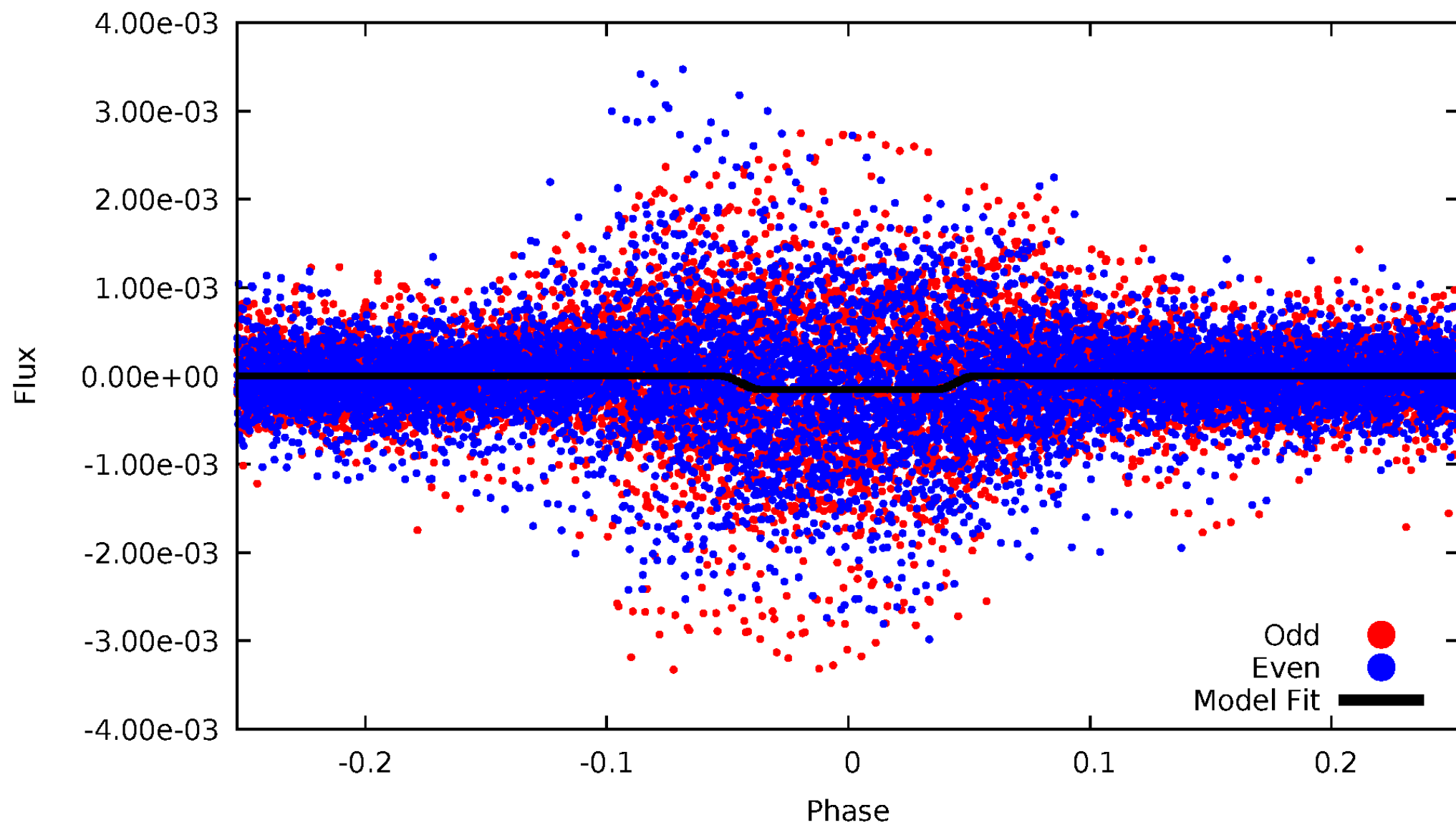
DV Odd/Even

TCE 009393006-02



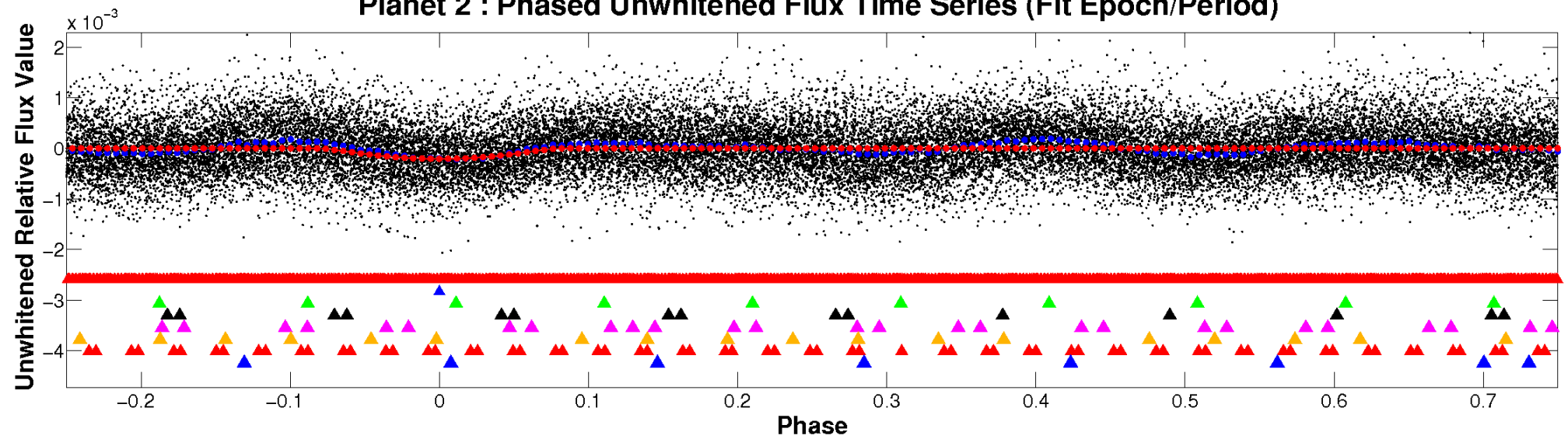
ALT Odd/Even

TCE 009393006-02

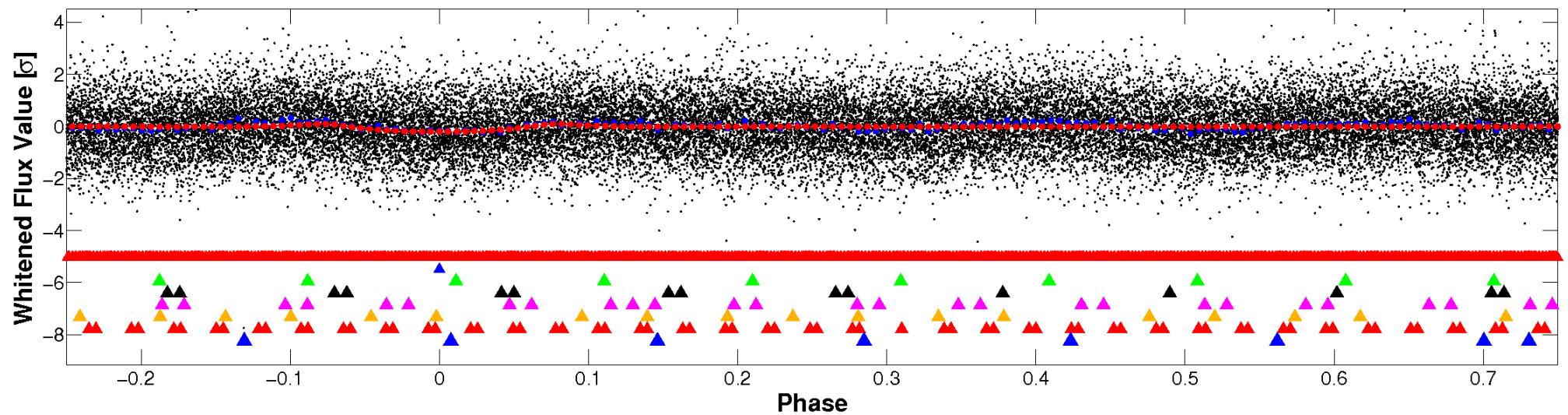


Non-Whitened Vs. Whitened Light Curve

Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

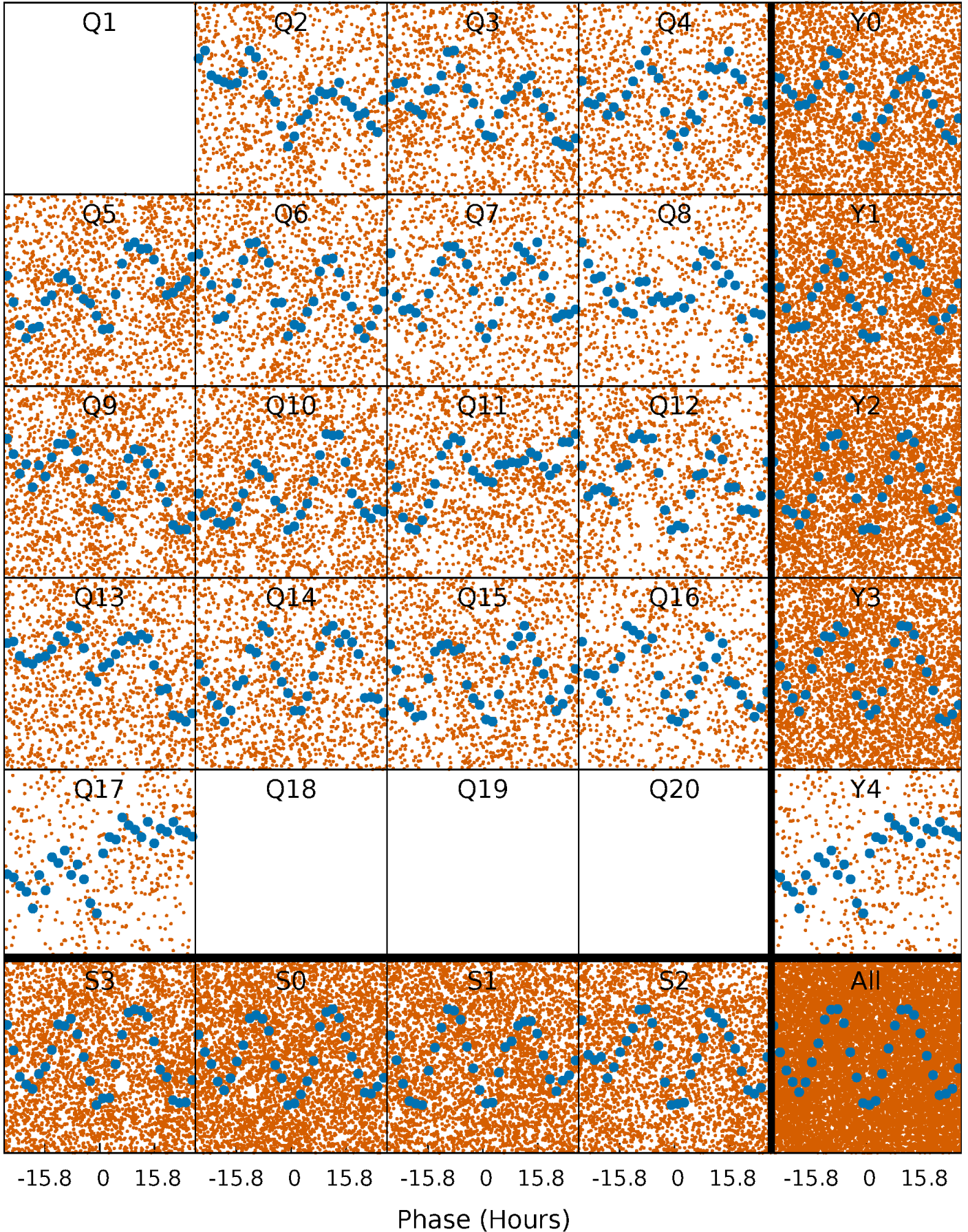


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



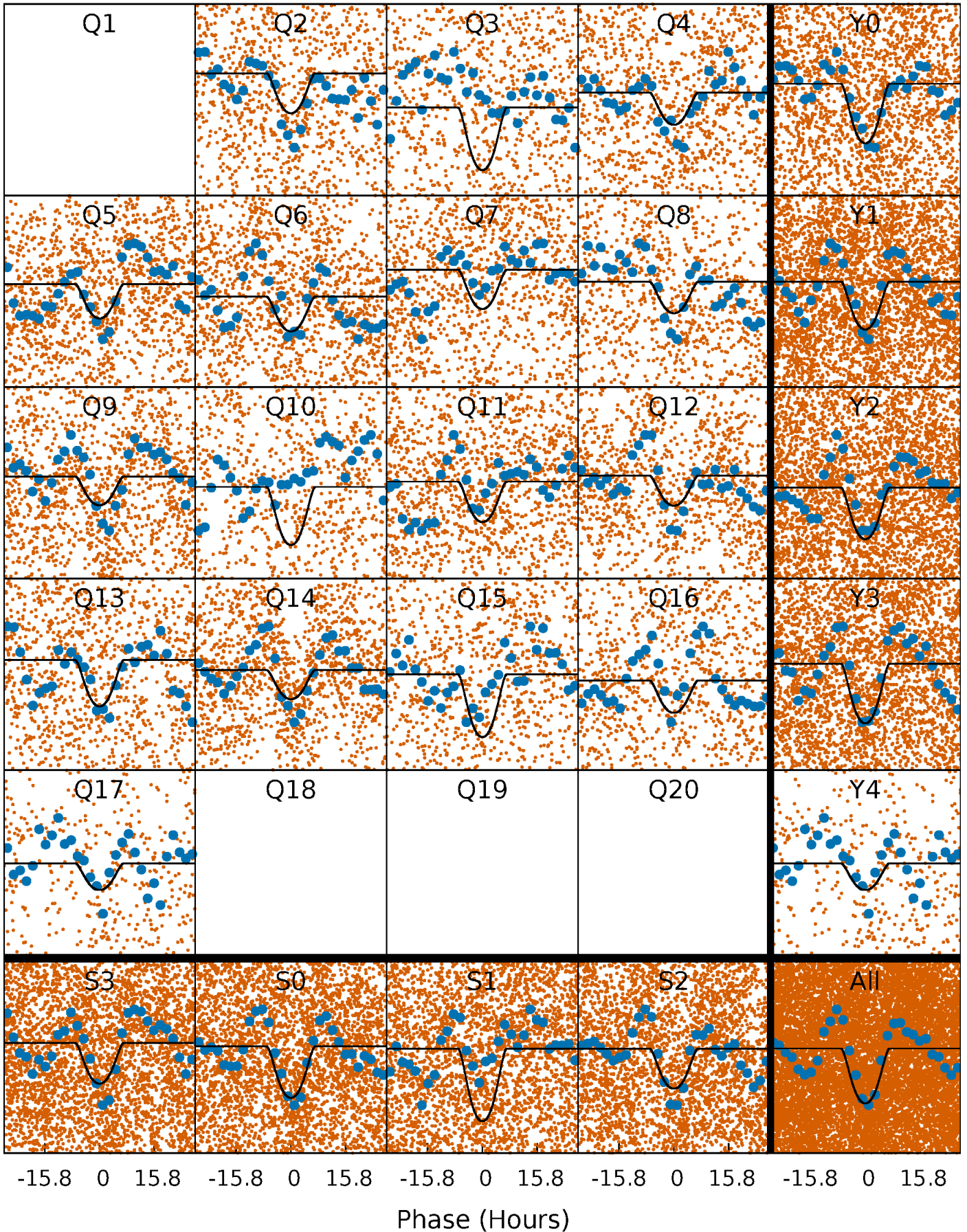
PDC Quarter-Phased Transit Curves

TCE 009393006-02 $P = 3.487834$ Days $T_0 = 132.373899$ (BKJD)



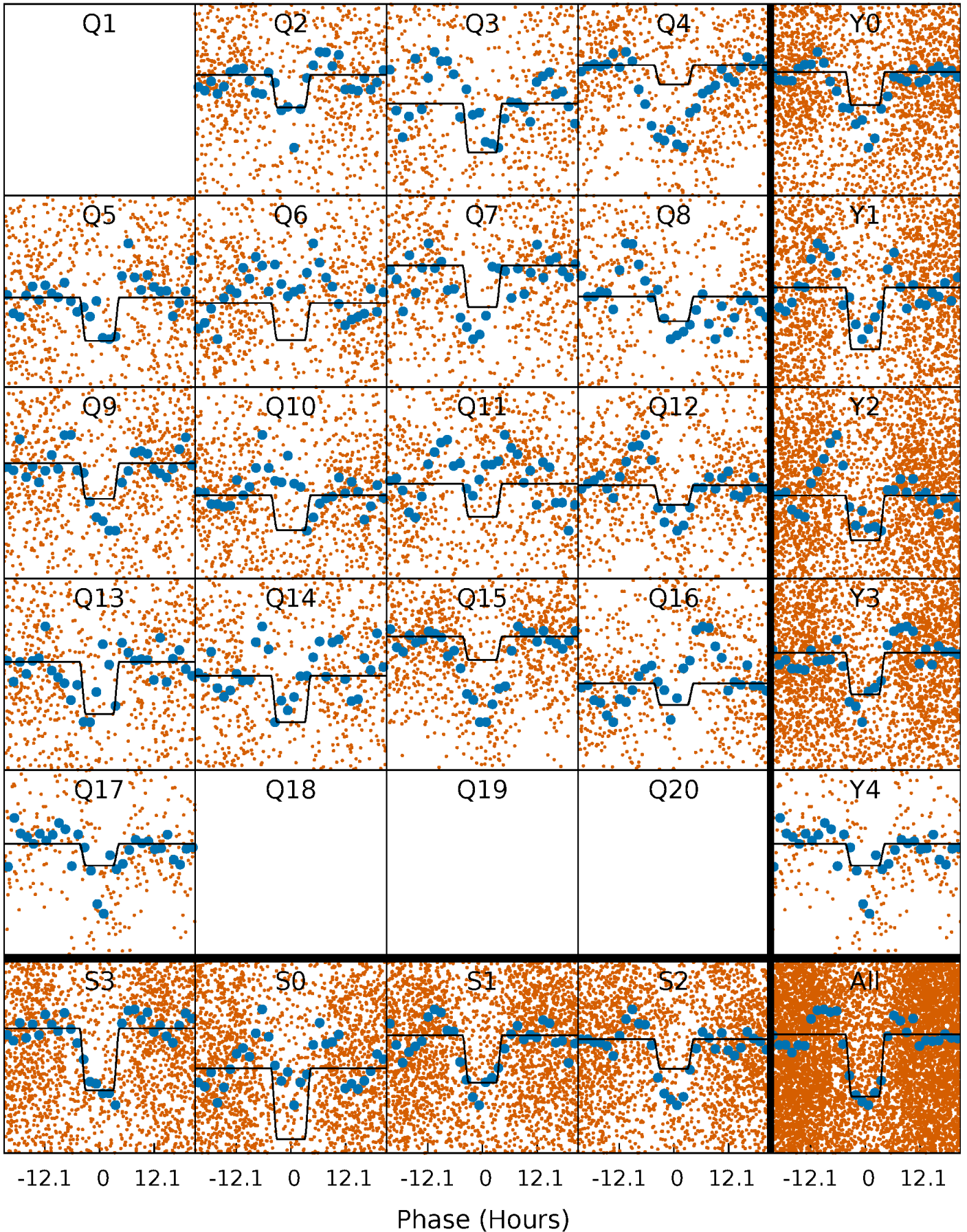
DV Quarter-Phased Transit Curves

TCE 009393006-02 P= 3.487834 Days $T_0=132.373899$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

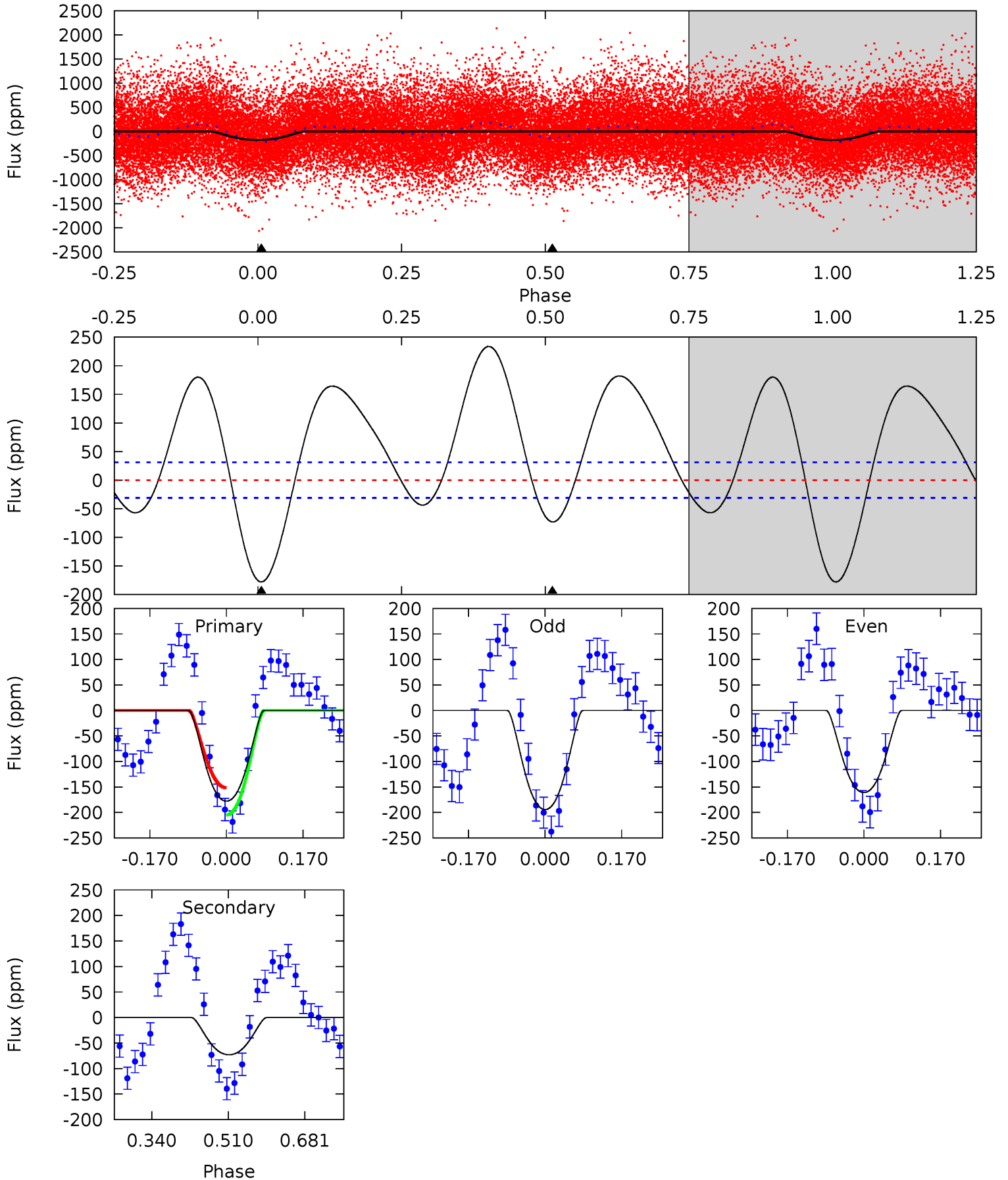
TCE 009393006-02 $P = 3.487837$ Days $T_0 = 132.385870$ (BKJD)



DV Model-Shift Uniqueness Test

009393006-02, P = 3.487834 Days, E = 132.373899 Days

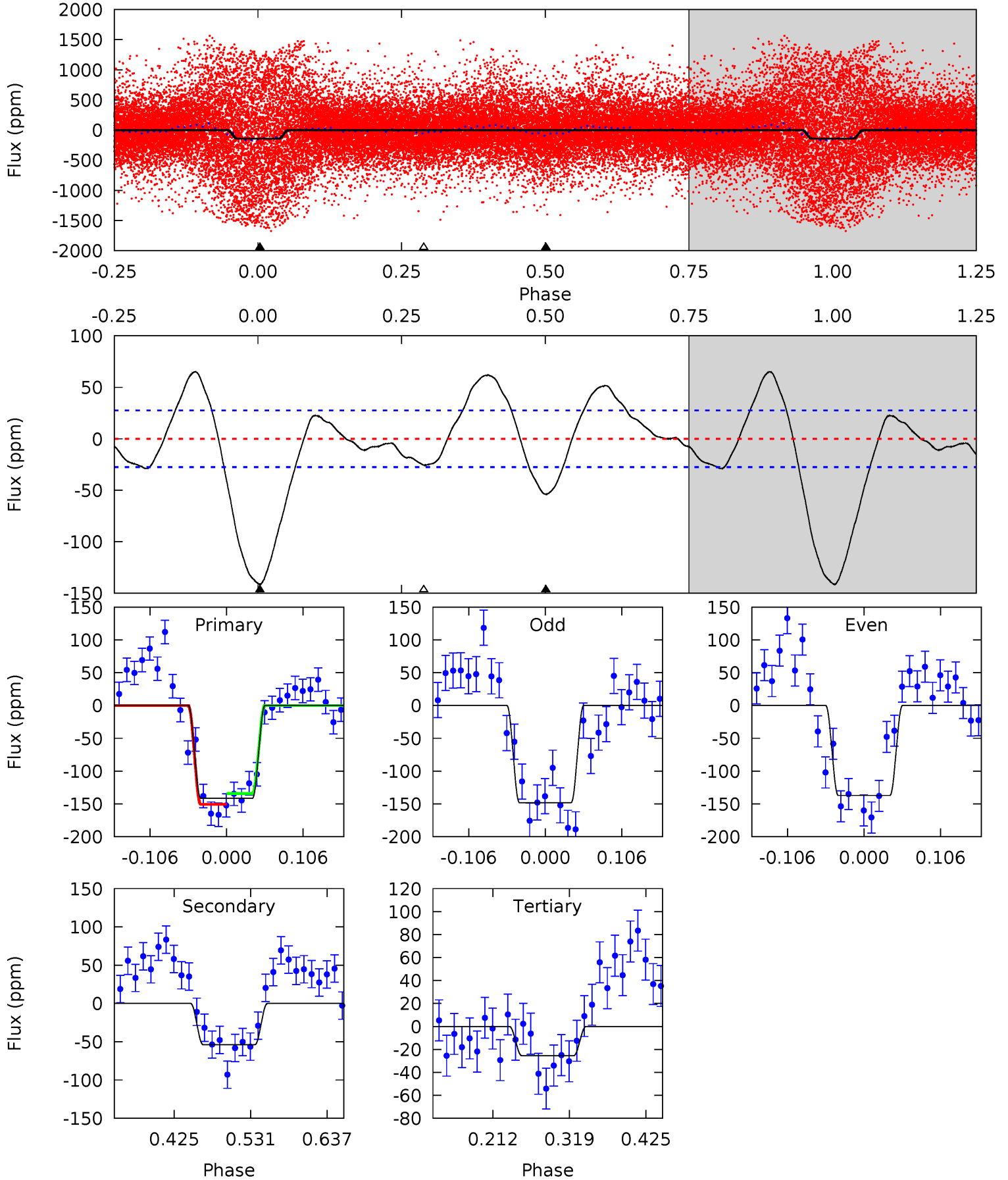
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.5	10.5	0	0	4.45	1.37	7.51	25.5	25.5	10.5	10.5	2.40	1.18	0.57	3.83



Alt Model-Shift Uniqueness Test

009393006-02, P = 3.487837 Days, E = 132.385870 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.4	8.89	4.22	0	4.55	1.62	4.11	19.1	23.4	4.67	8.89	0.90	1.04	0.32	1.37



Stellar Parameters For KIC 009393006

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009393006-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-73 ± 7	$2.09^{+0.44}_{-0.38}$	1683^{+81}_{-80}	4121^{+365}_{-279}	19^{+10}_{-6}
Alt.	-54 ± 6	$1.35^{+0.40}_{-0.40}$	1683^{+80}_{-83}	4608^{+724}_{-490}	32^{+35}_{-13}

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
 A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

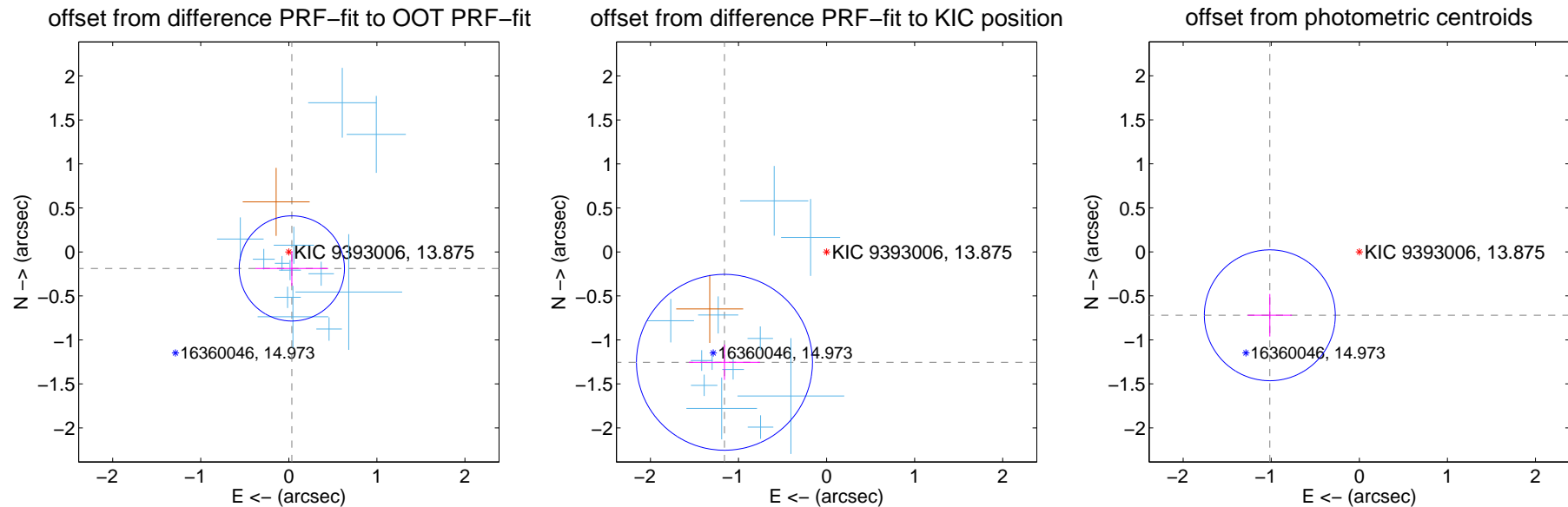
DV Centroid Data

Supplemental centroid analysis for 009393006-02. Kepler magnitude: 13.88. Transit SNR 10.56

There are 12 quarters with good PRF difference image offsets

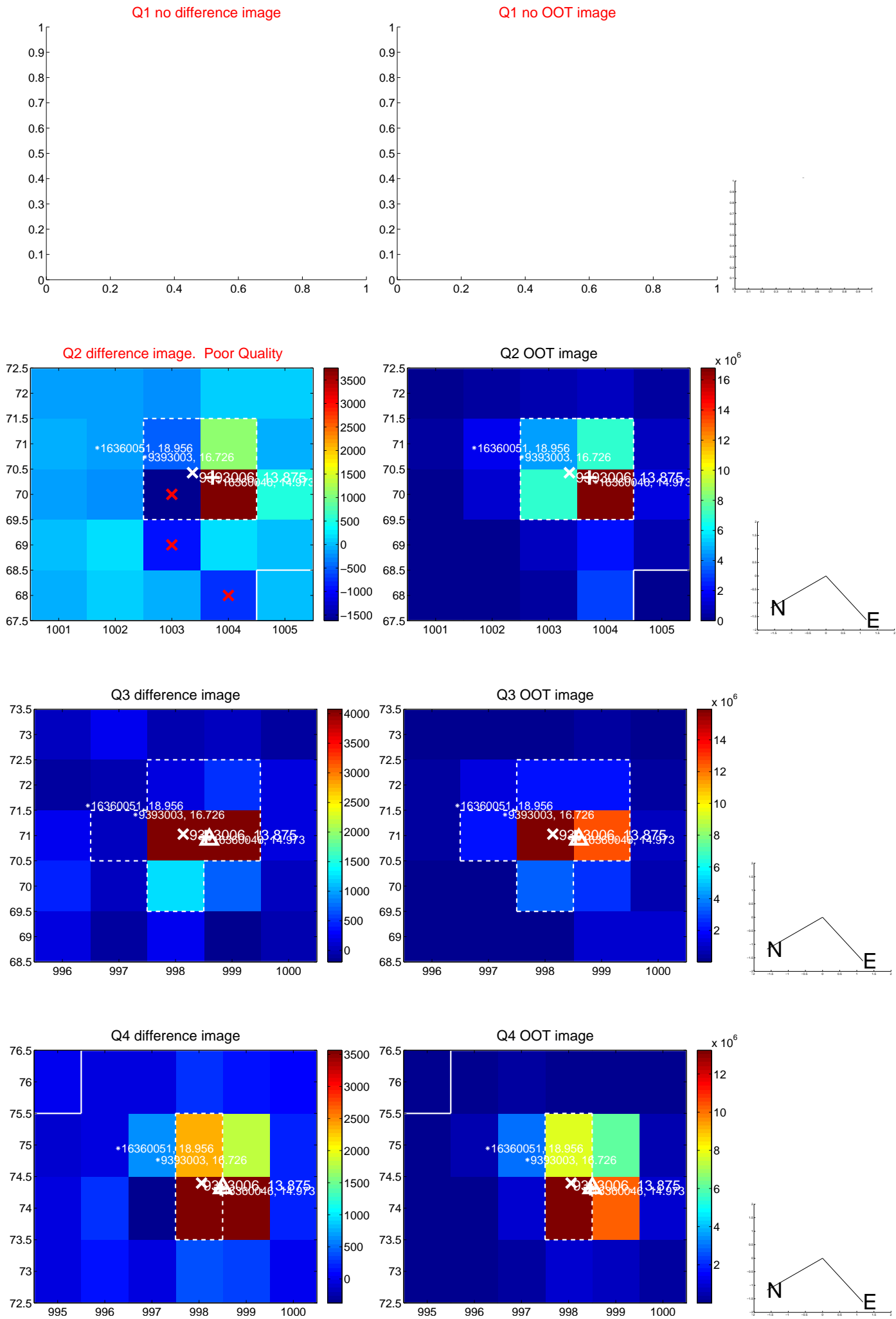
The direct PRF centroid is offset from the target star catalog position by about 1.62 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.191 ± 0.199	0.96	-0.034 ± 0.413	-0.188 ± 0.197
PRF-fit source offset from KIC position	1.708 ± 0.333	5.13	1.160 ± 0.403	-1.254 ± 0.201
photometric centroid source offset	1.25 ± 0.25	5.03	1.02 ± 0.25	-0.72 ± 0.24

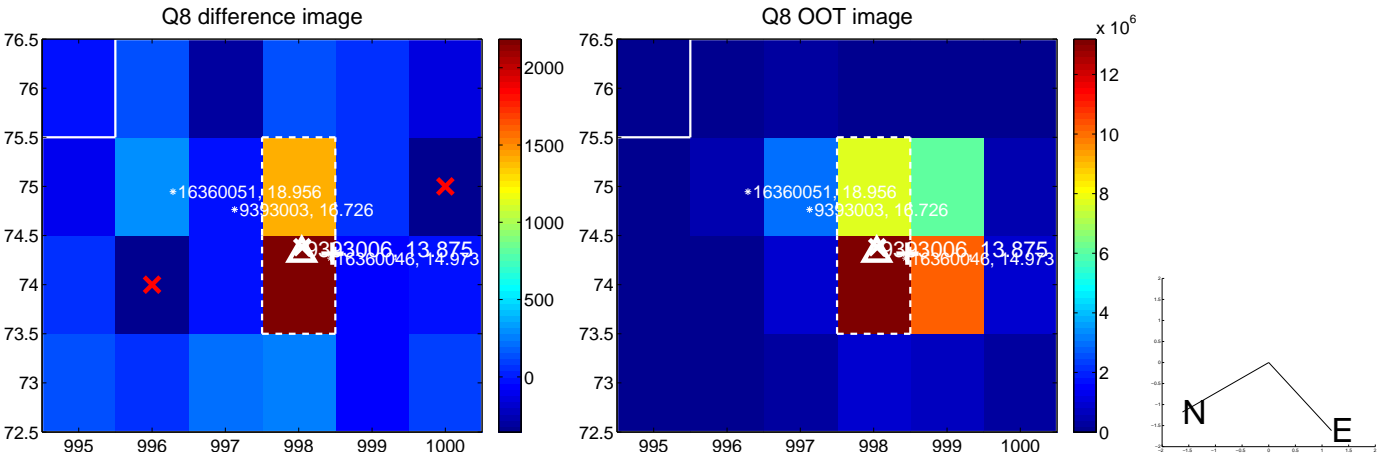
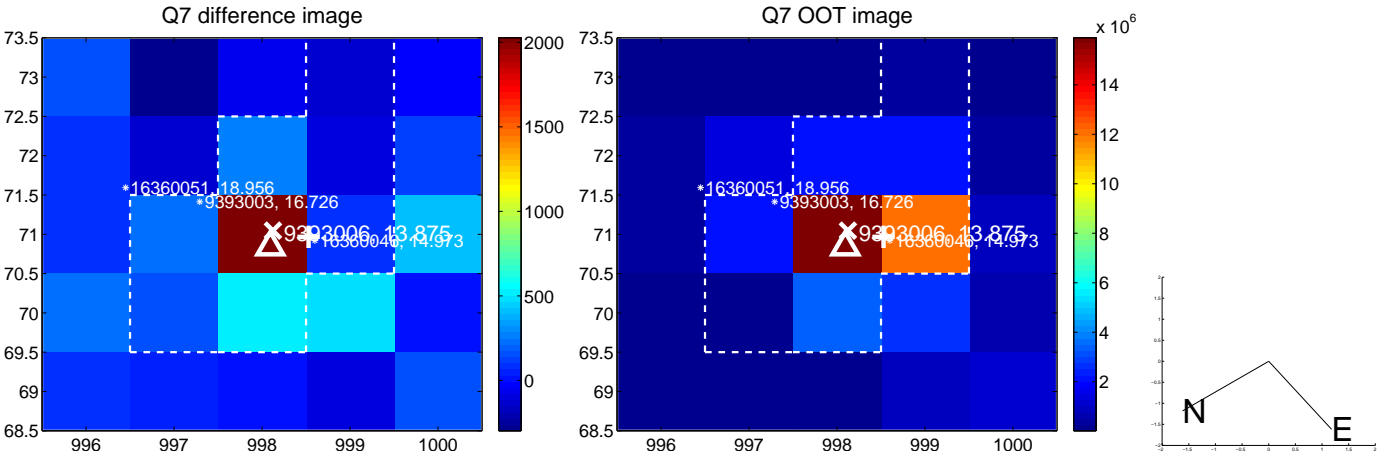
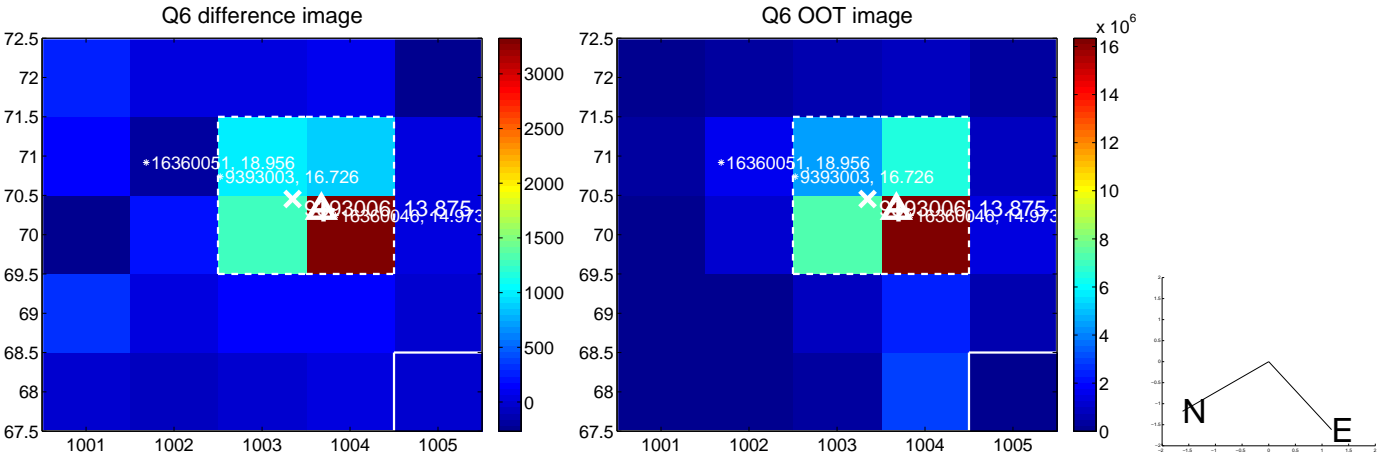
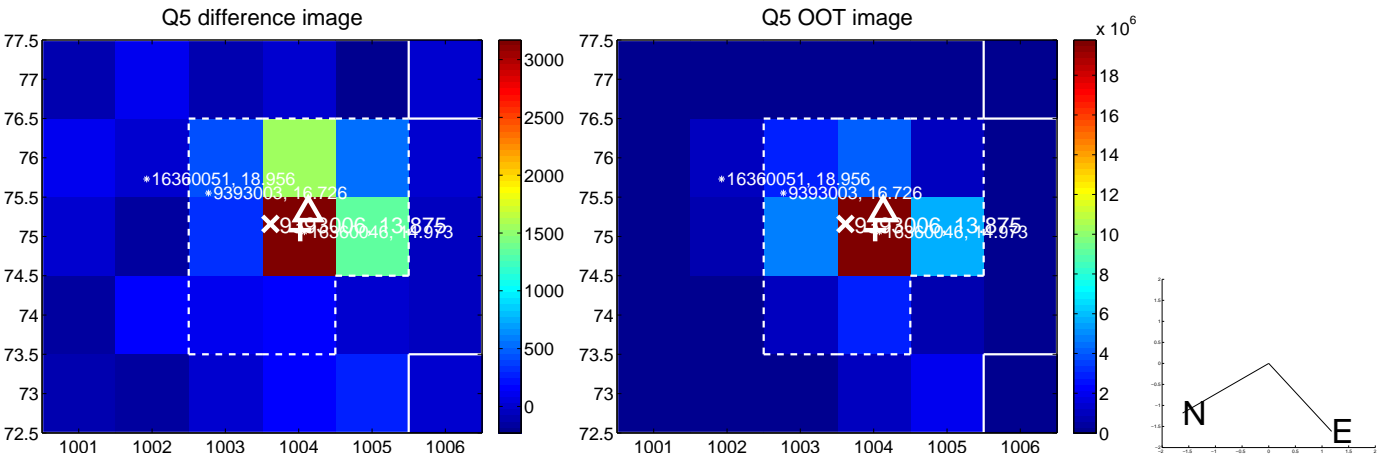


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

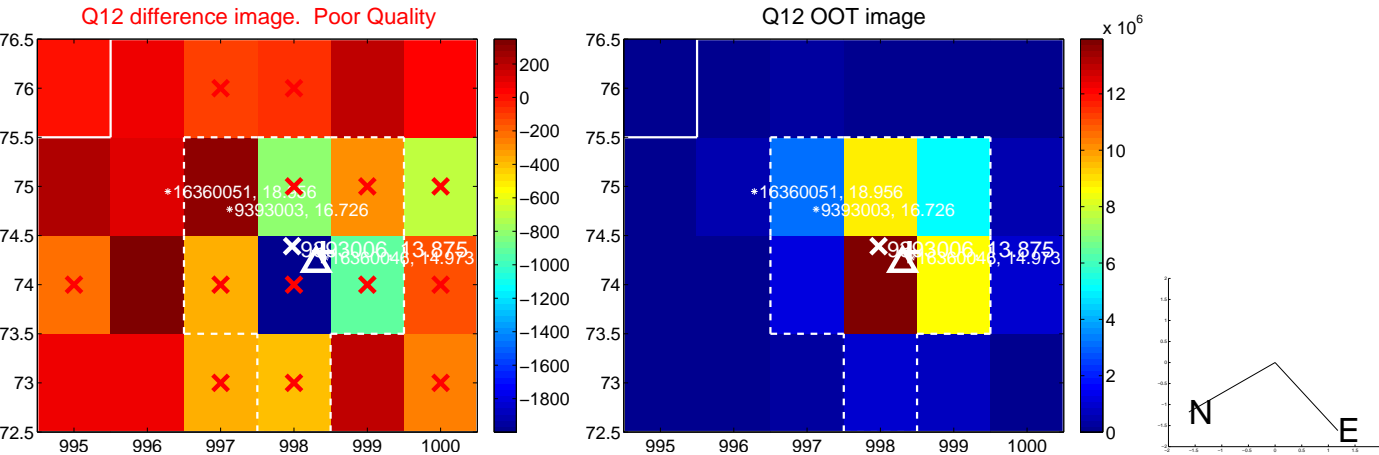
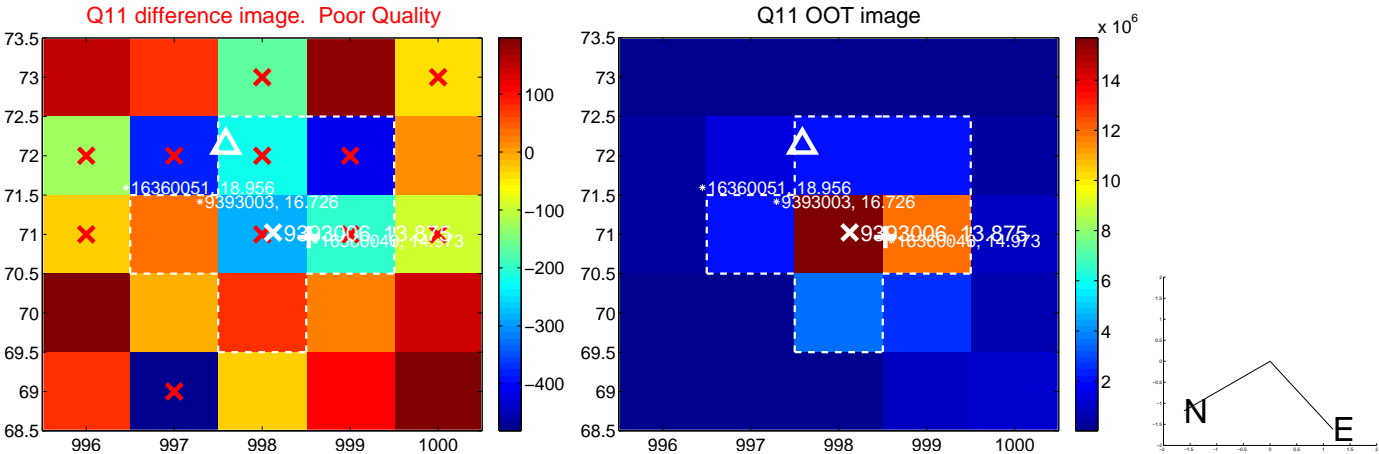
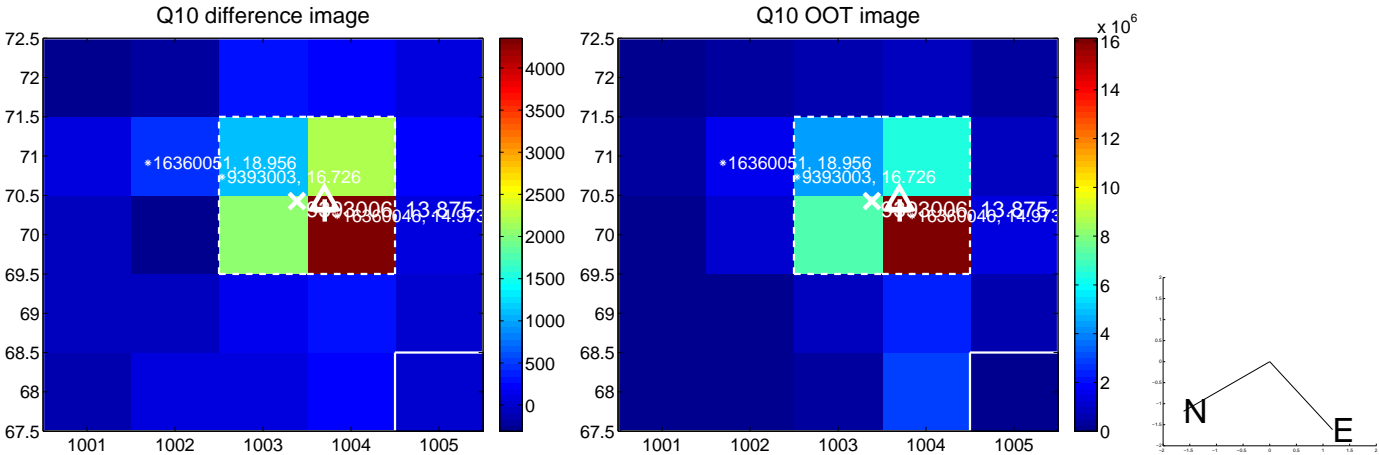
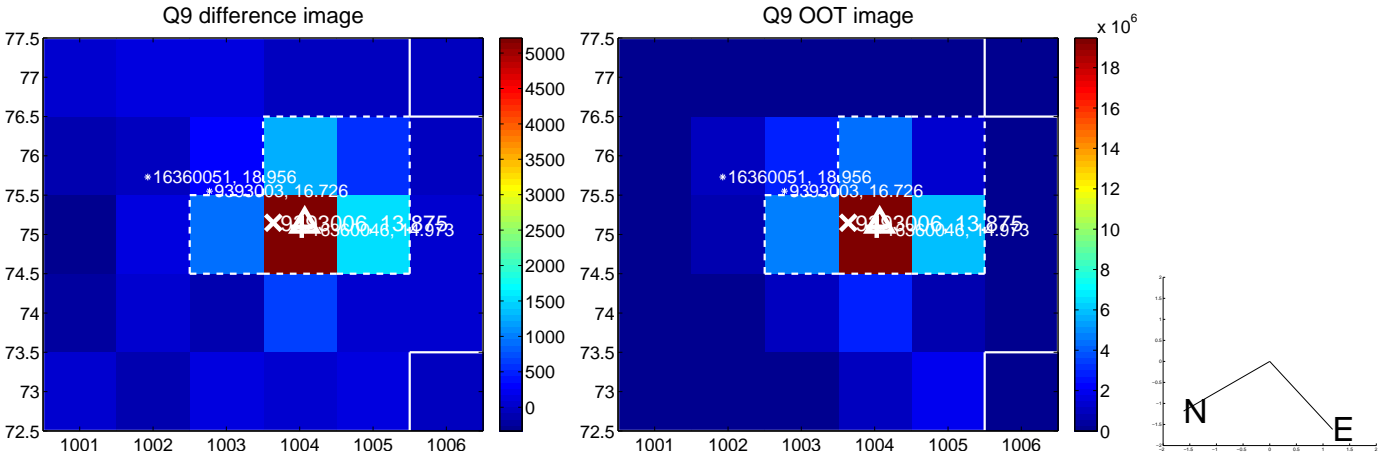
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



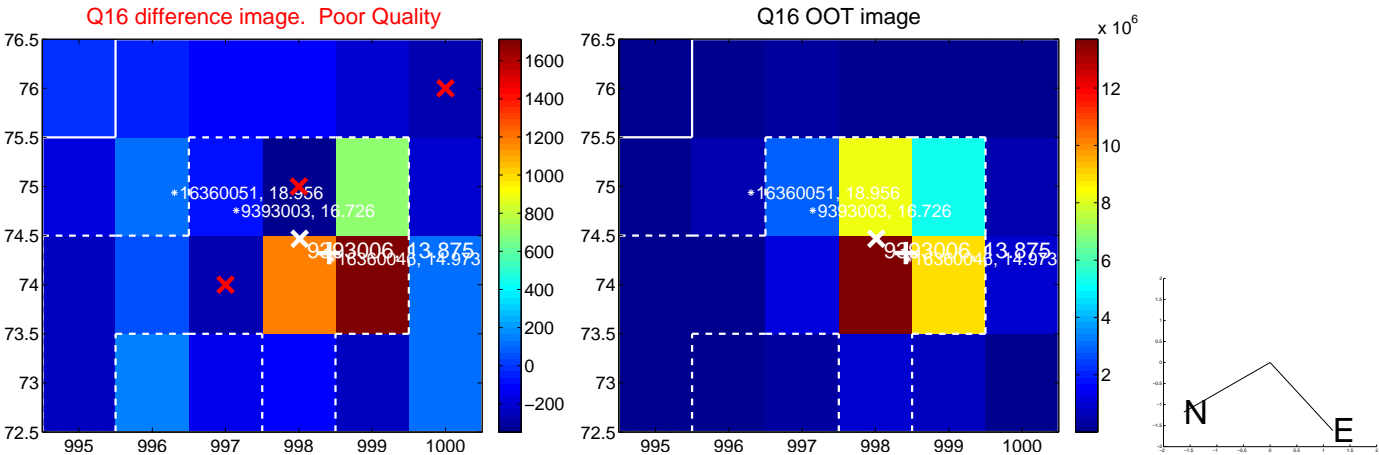
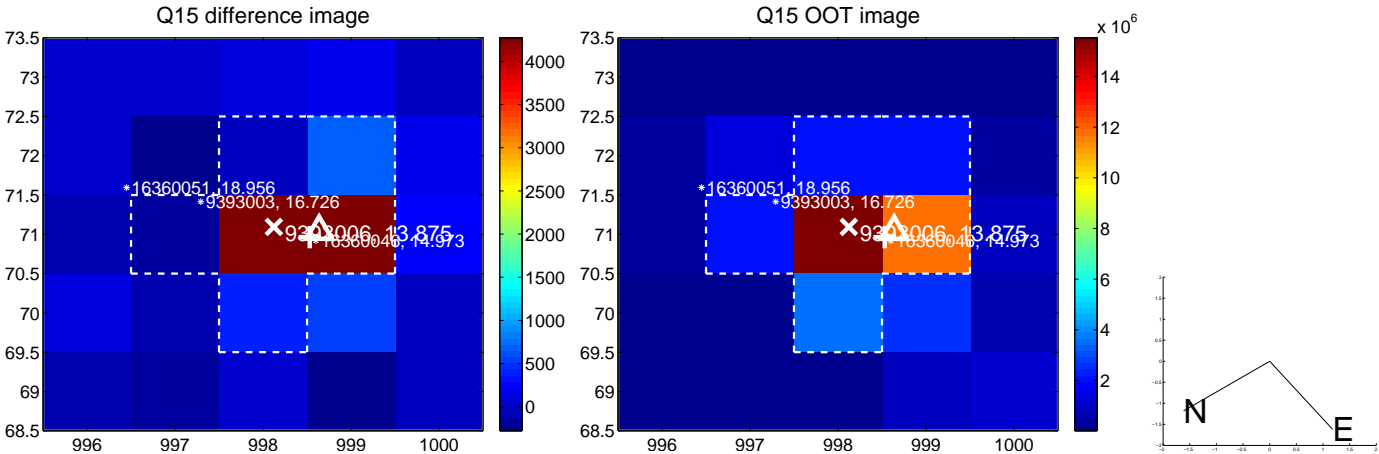
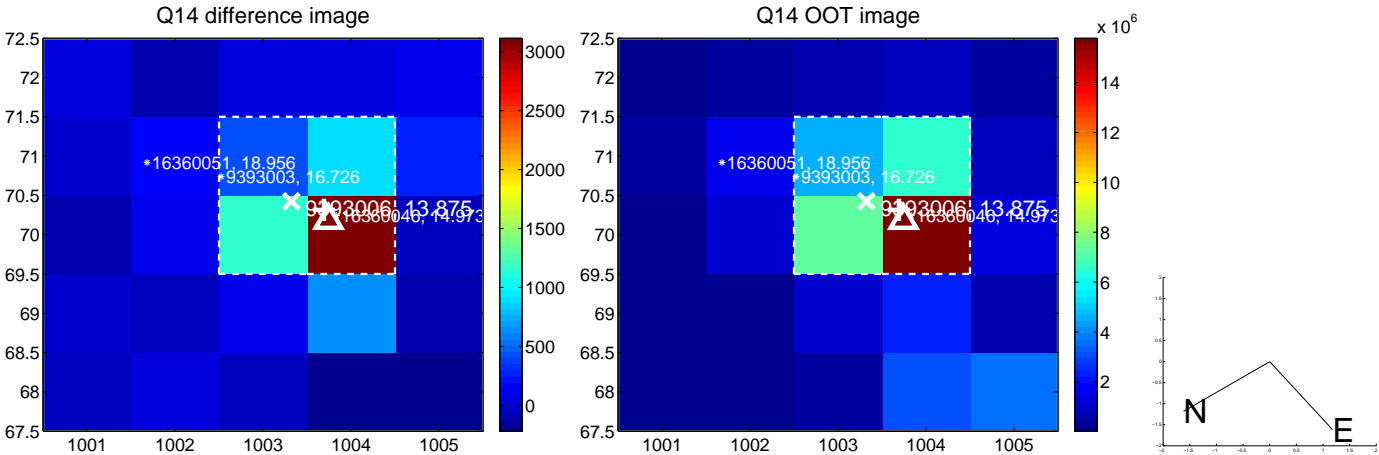
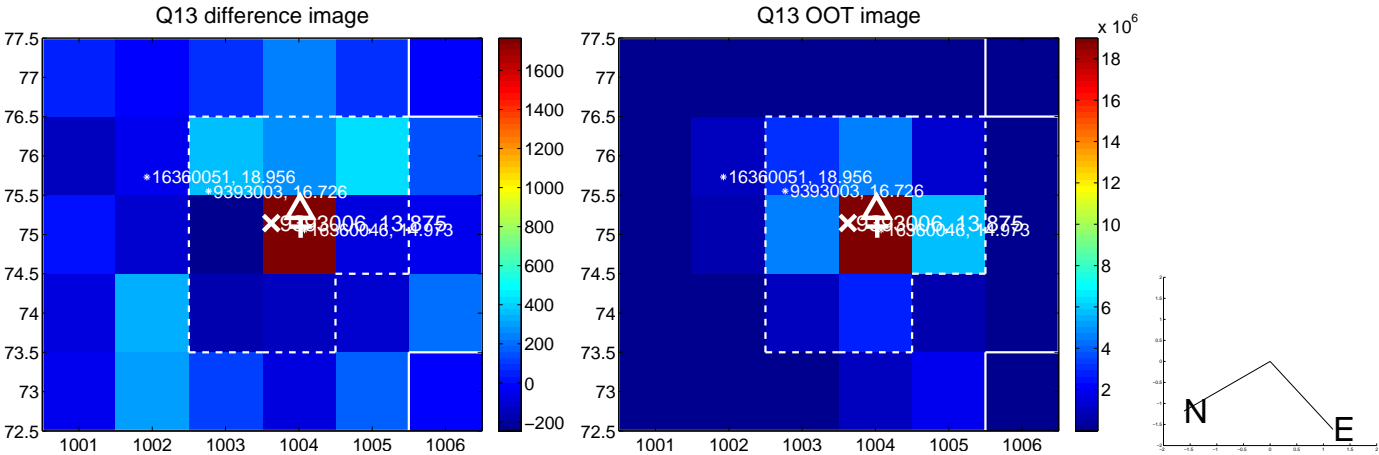
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

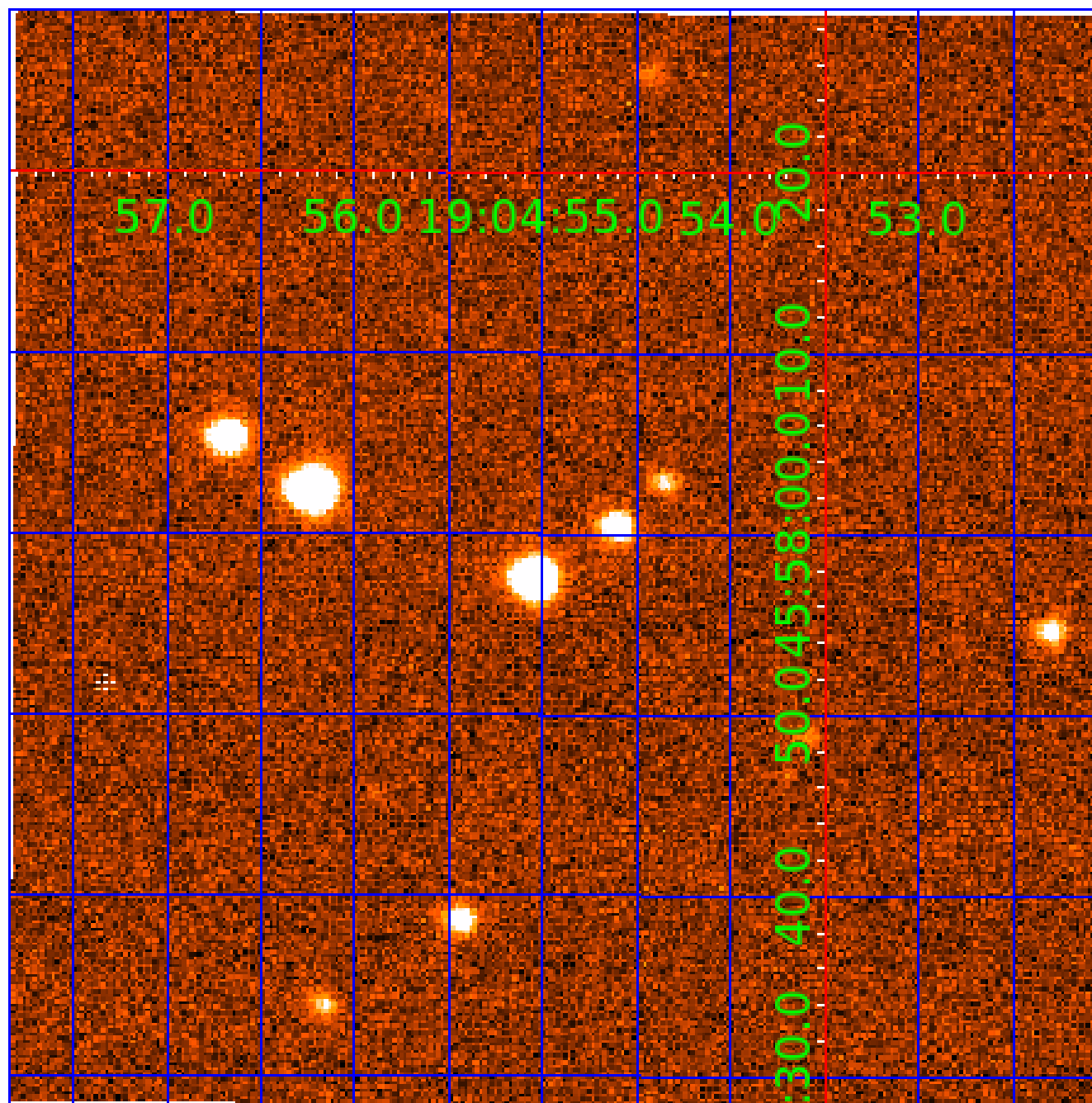


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009393006

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009393006-01	OBS	No	1.321269	132.535802	44.6	4.893	7.7	7.4	1.00	5780	0.66	1800.05
009393006-02	OBS	No	3.487834	132.373899	207.6	13.803	8.5	10.6	1.00	5780	2.11	493.40
009393006-03	OBS	No	149.630074	187.157870	802.9	14.505	15.1	6.8	1.00	5780	3.83	3.29
009393006-05	OBS	No	54.467839	132.774777	456.6	6.422	9.2	7.6	1.00	5780	2.23	12.64
009393006-06	OBS	No	78.059390	201.477510	632.6	5.368	9.7	8.0	1.00	5780	2.61	7.82
009393006-07	OBS	No	21.026194	140.546359	258.2	11.345	8.2	6.7	1.00	5780	1.74	44.97

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009393006-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_KIC_POS
009393006-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

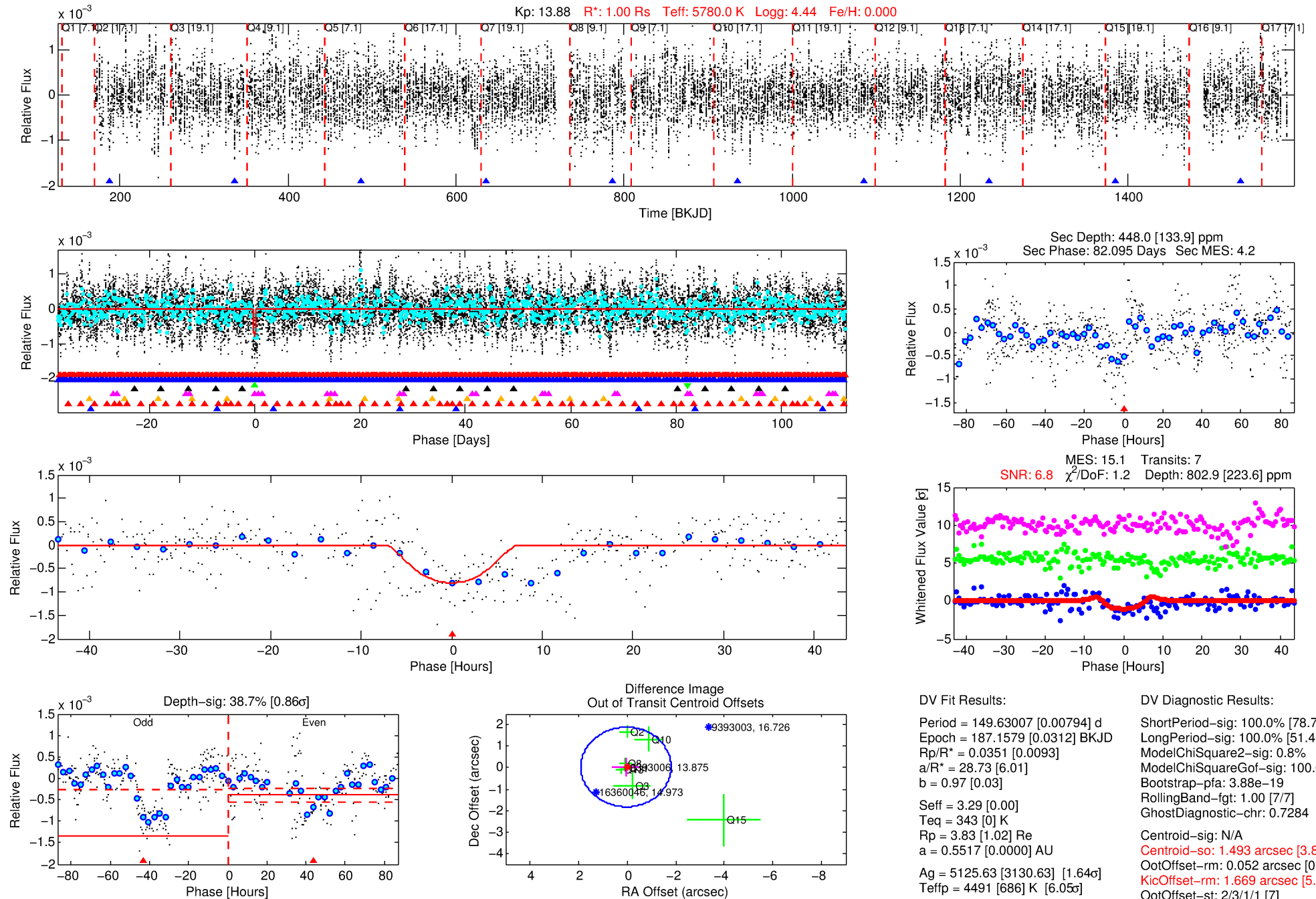
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009393006-03

No Significant Match Found

DV One-Page Summary

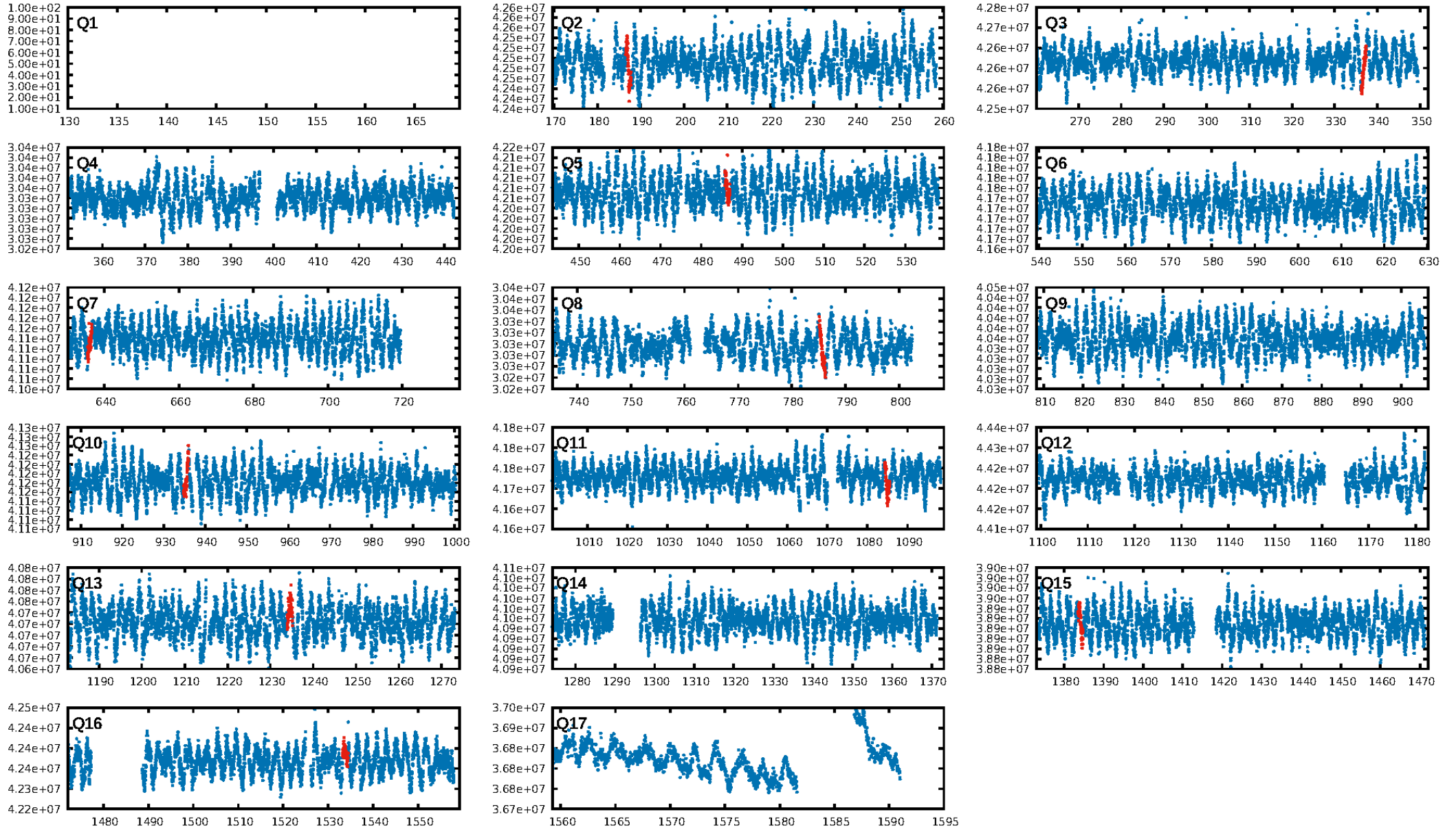
KIC: 9393006 Candidate: 3 of 8 Period: 149.630 d



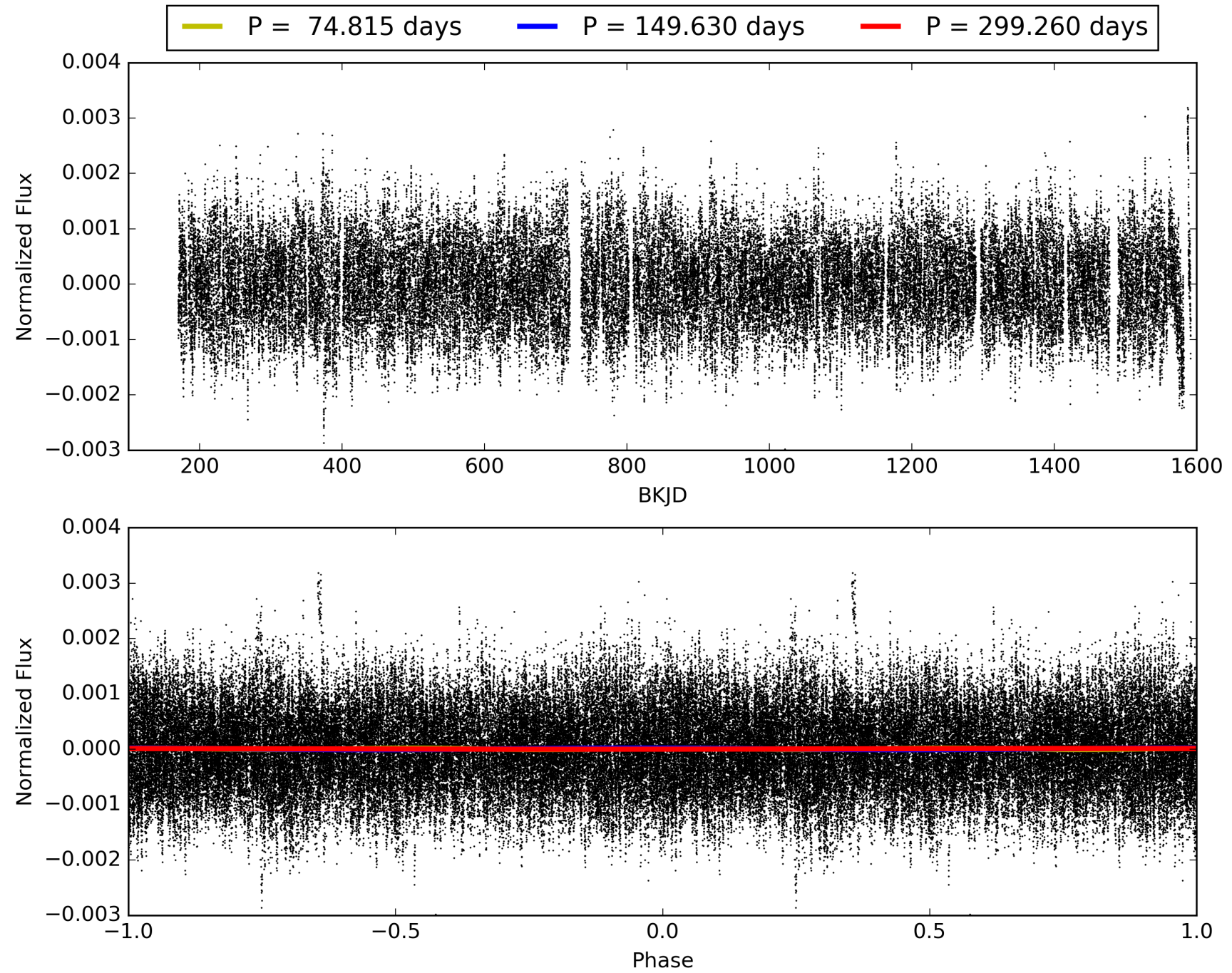
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:51:50 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009393006-03, PDC Light Curves

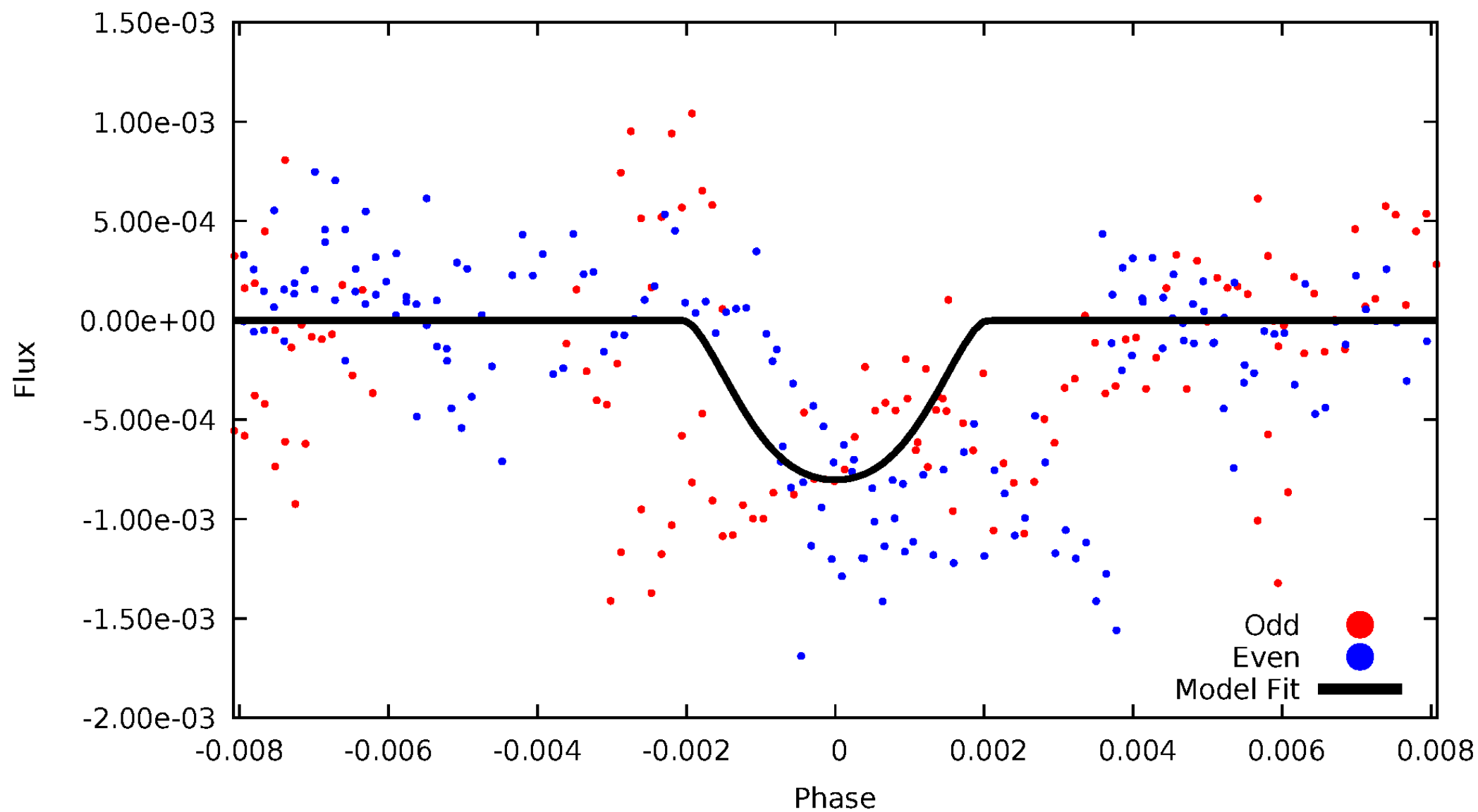


TCE 009393006-03



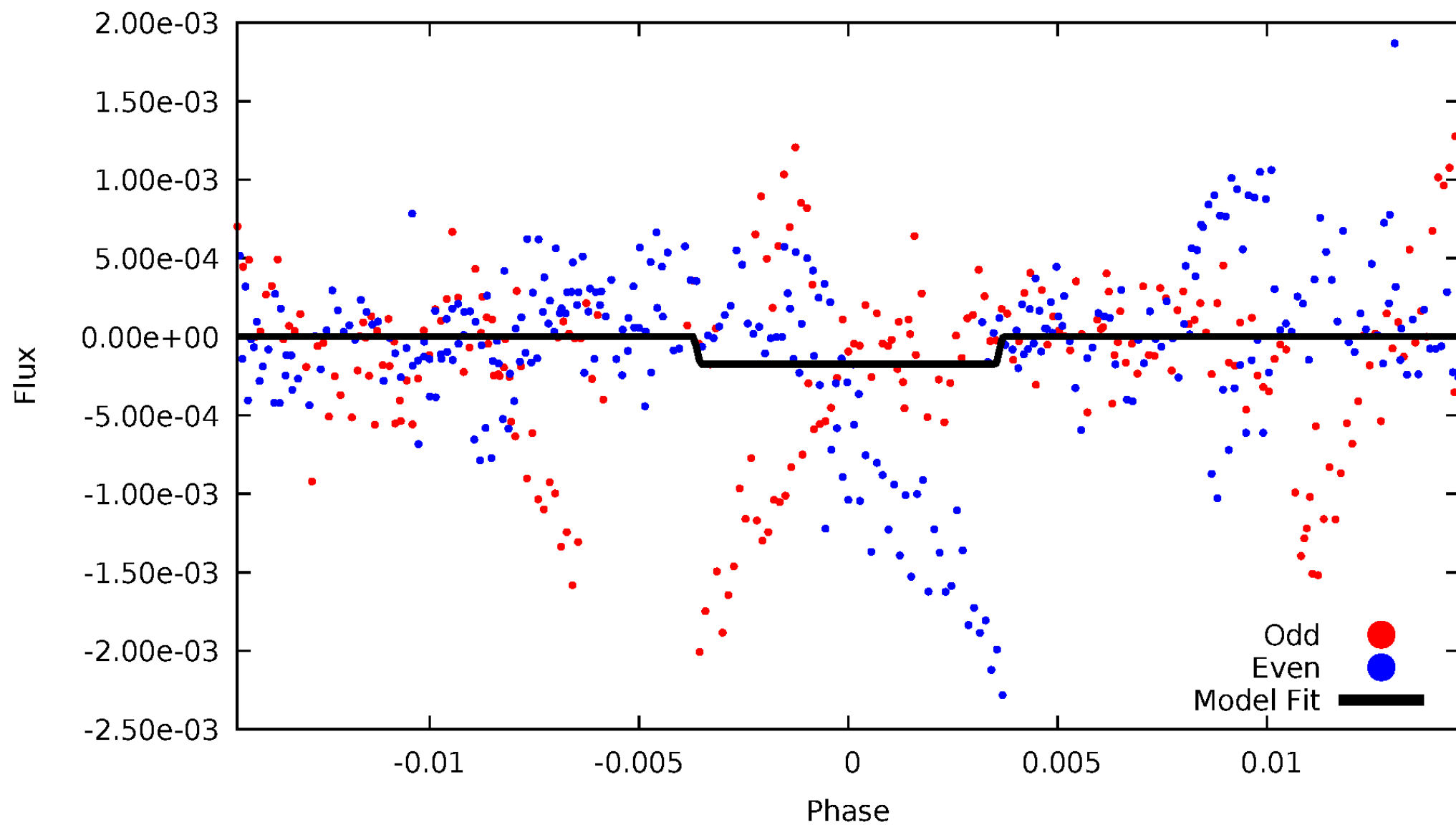
DV Odd/Even

TCE 009393006-03



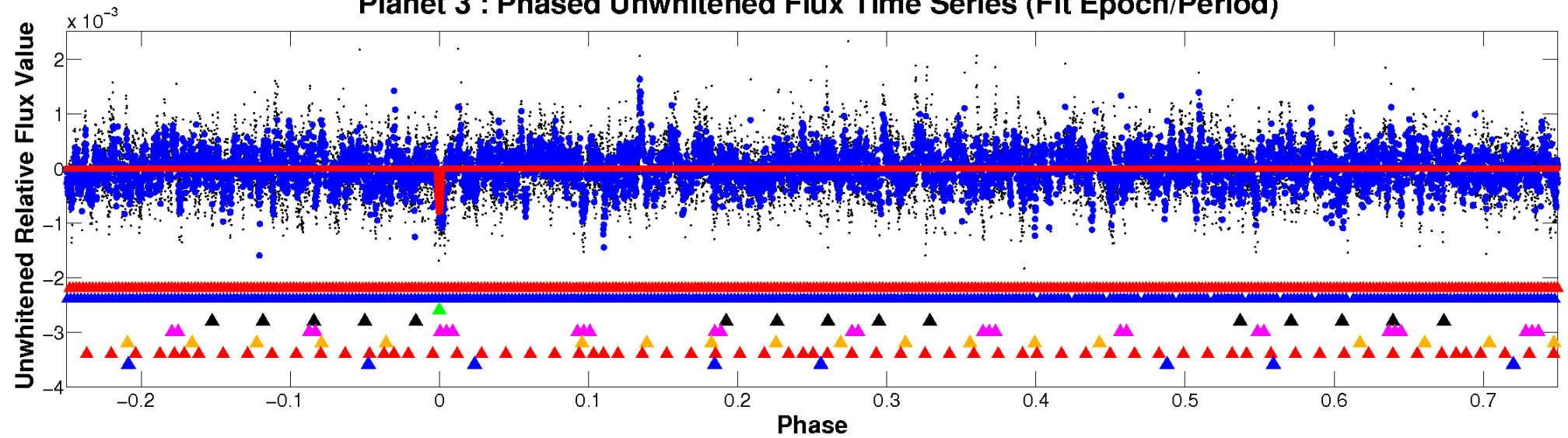
ALT Odd/Even

TCE 009393006-03

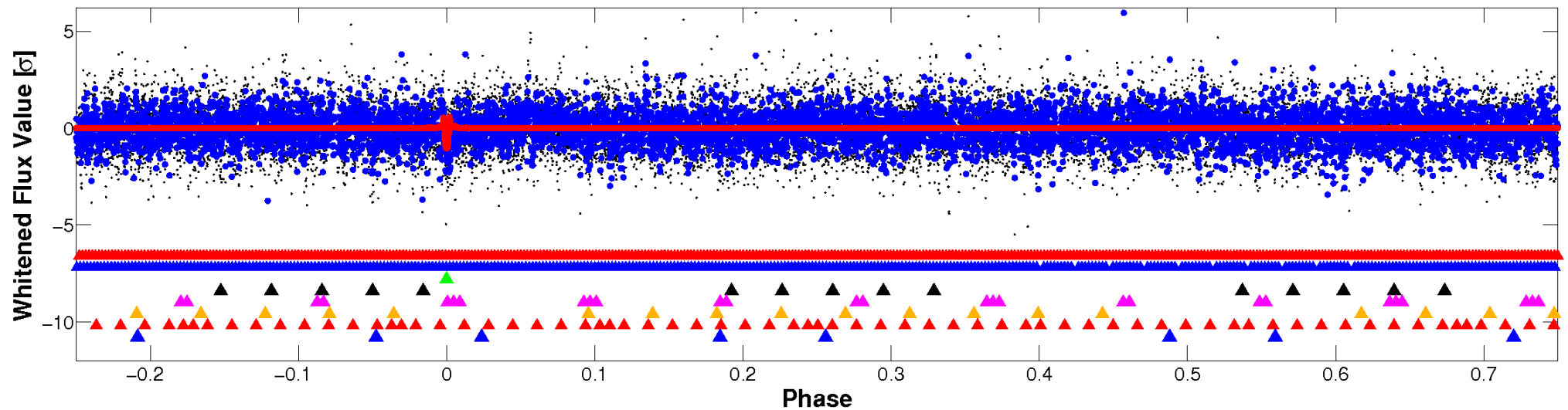


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

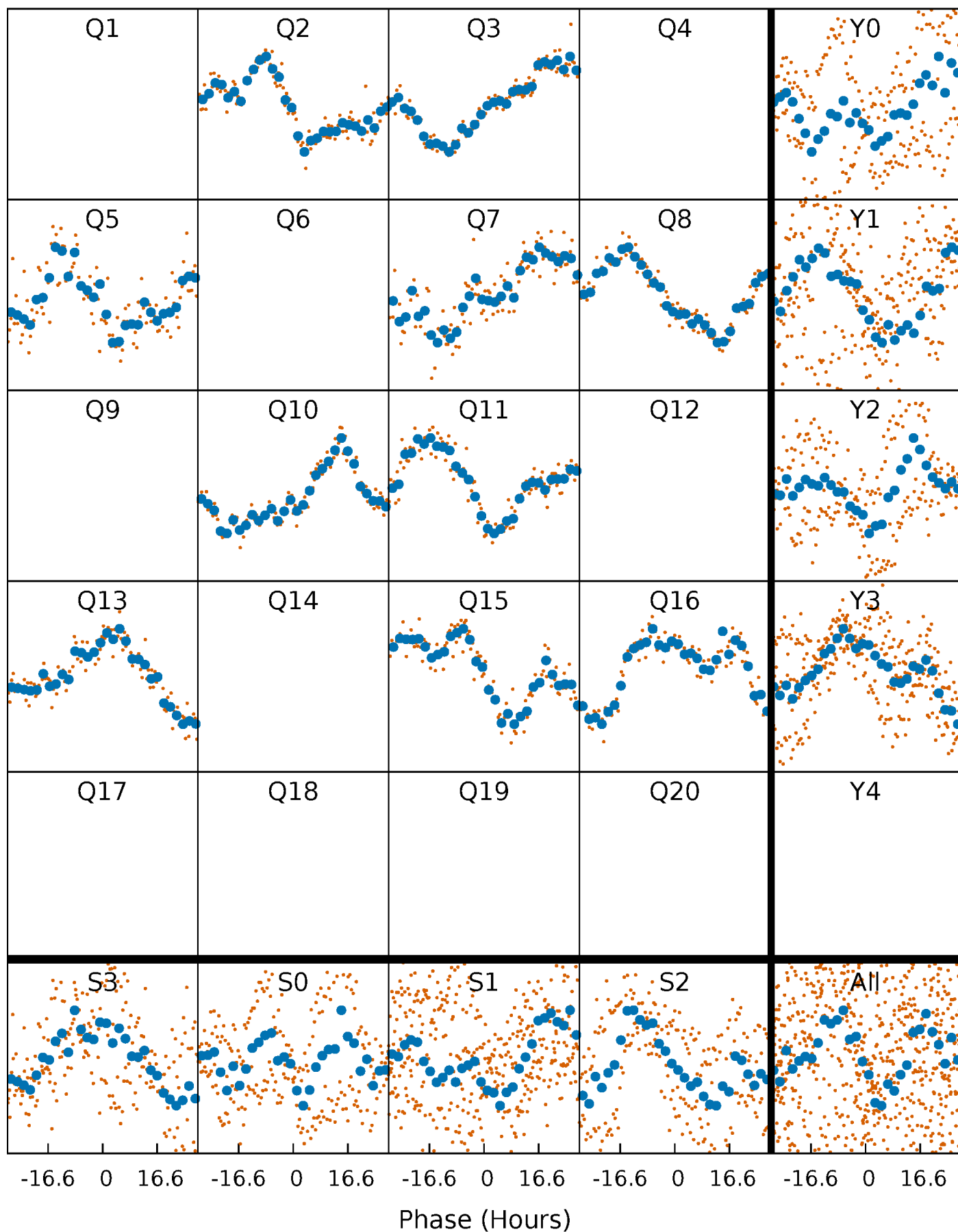


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



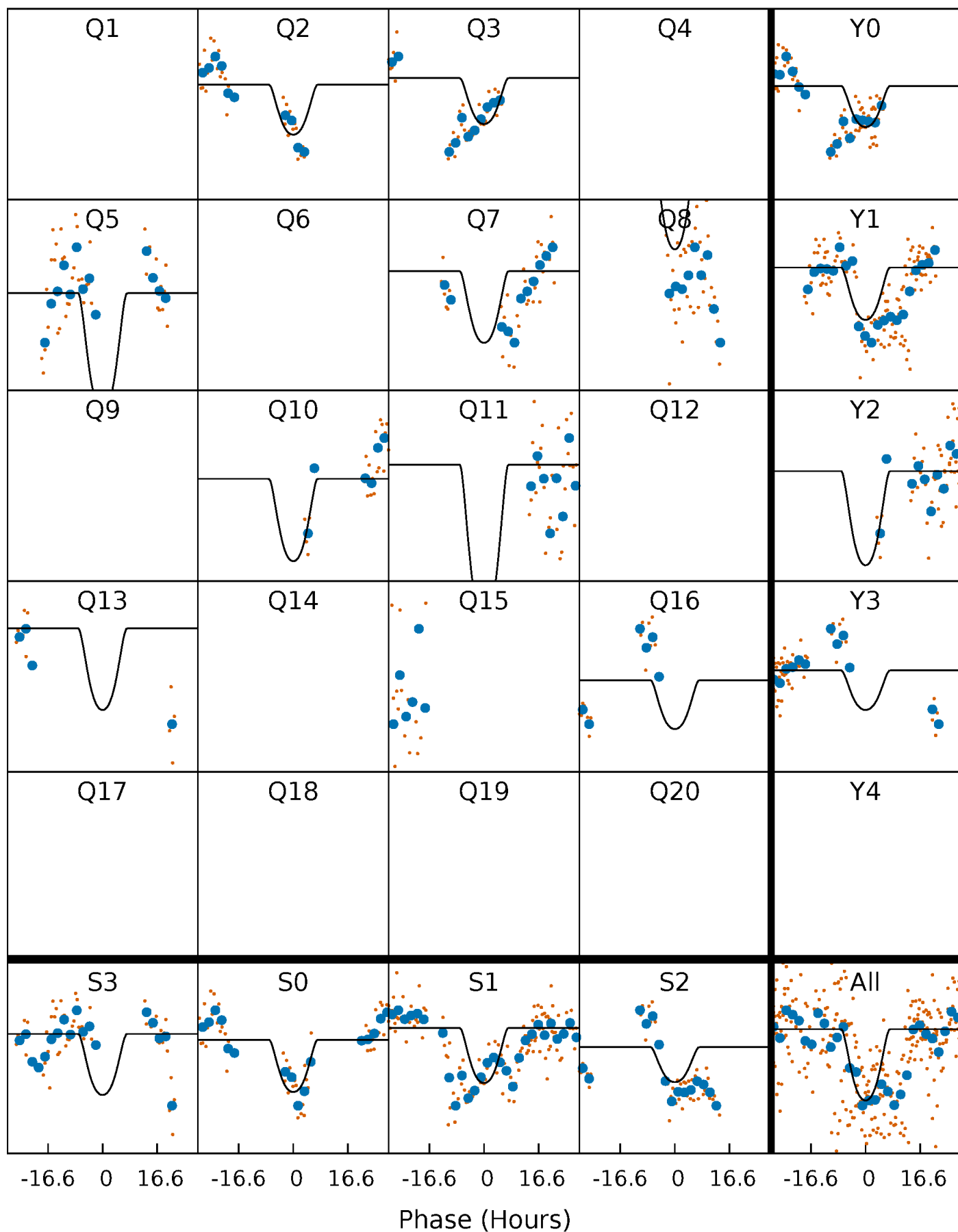
PDC Quarter-Phased Transit Curves

TCE 009393006-03 P=149.630074 Days $T_0=187.157870$ (BKJD)



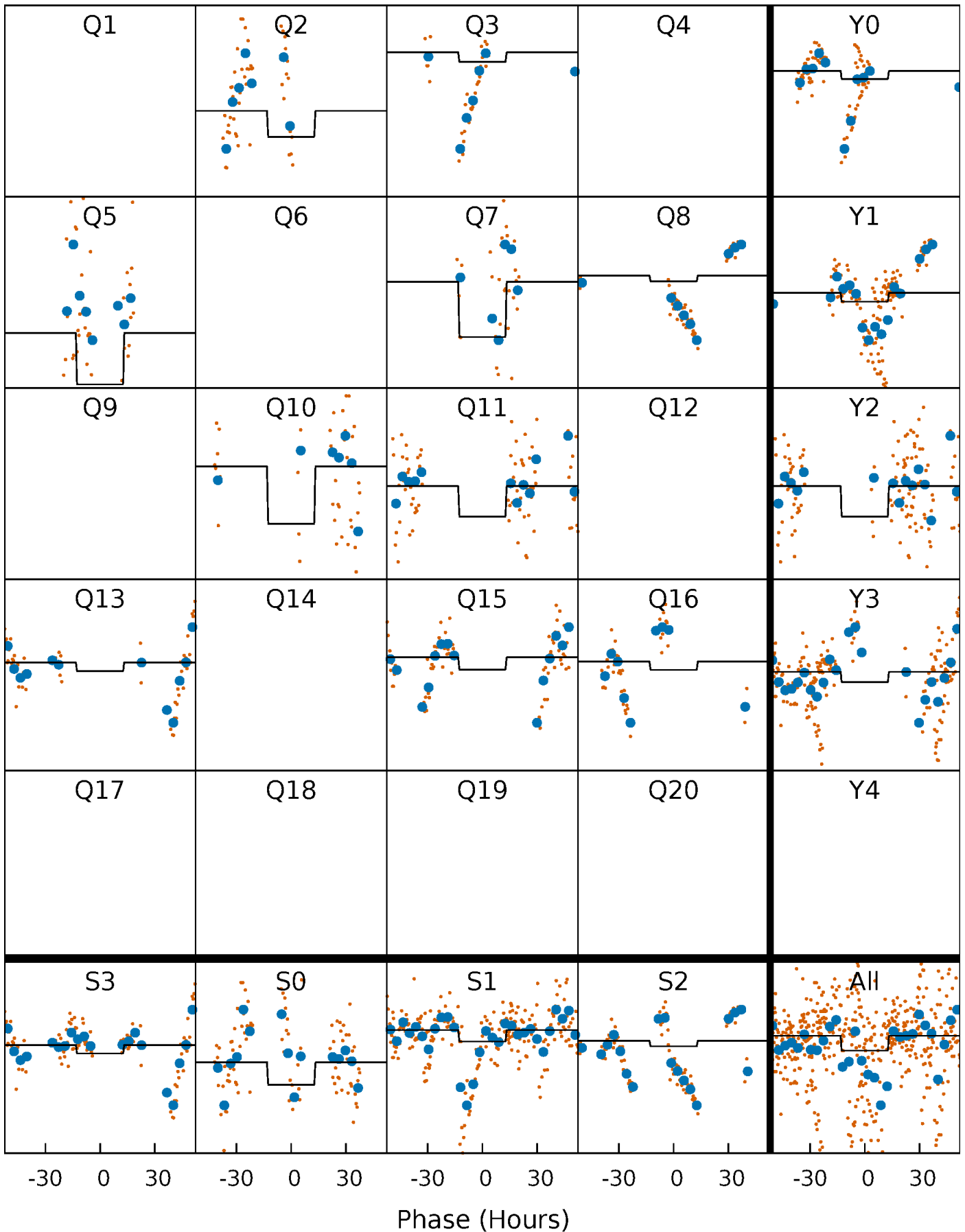
DV Quarter-Phased Transit Curves

TCE 009393006-03 $P=149.630074$ Days $T_0=187.157870$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

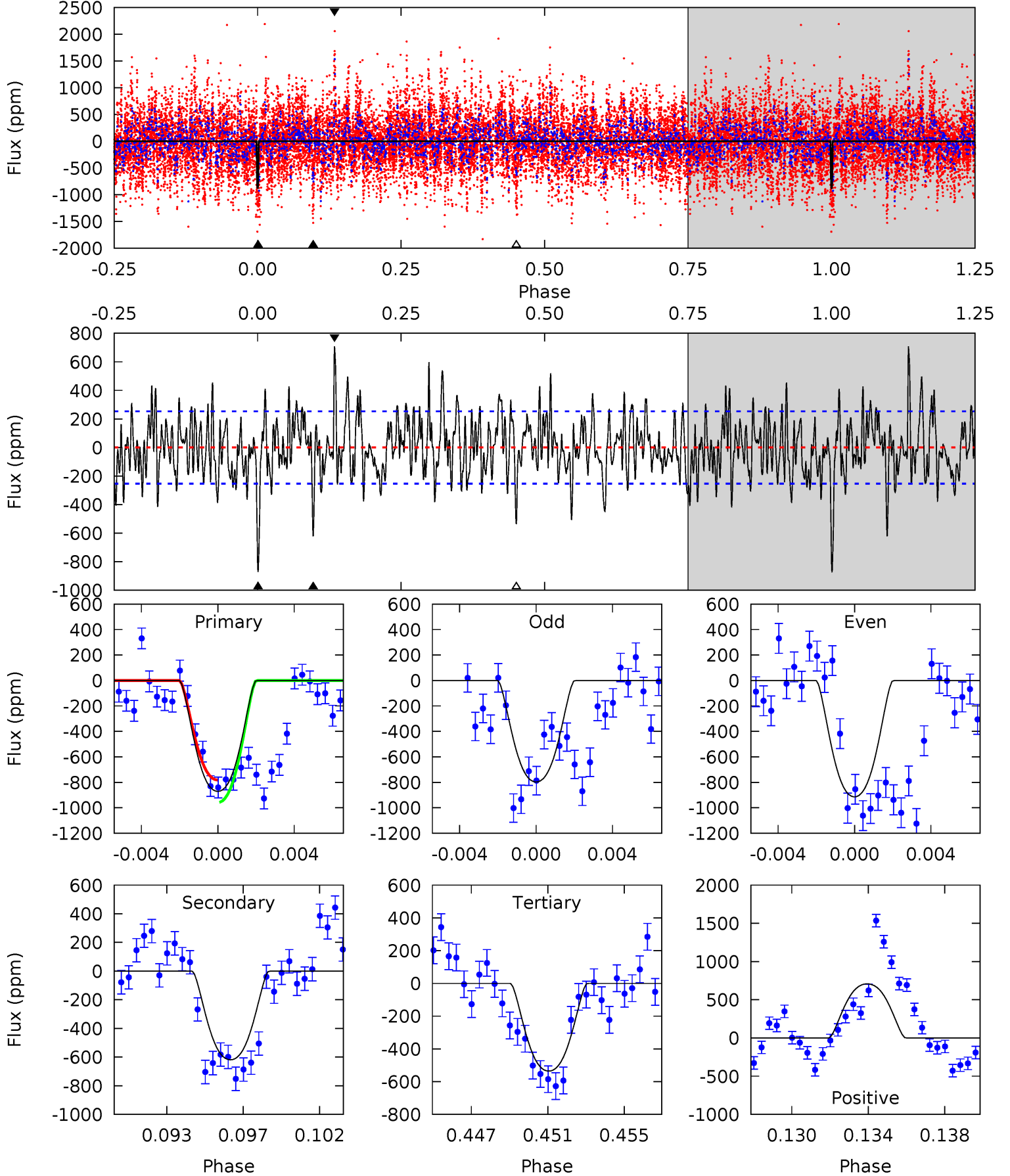
TCE 009393006-03 P=149.607715 Days $T_0=187.260369$ (BKJD)



DV Model-Shift Uniqueness Test

009393006-03, P = 149.630074 Days, E = 37.527796 Days

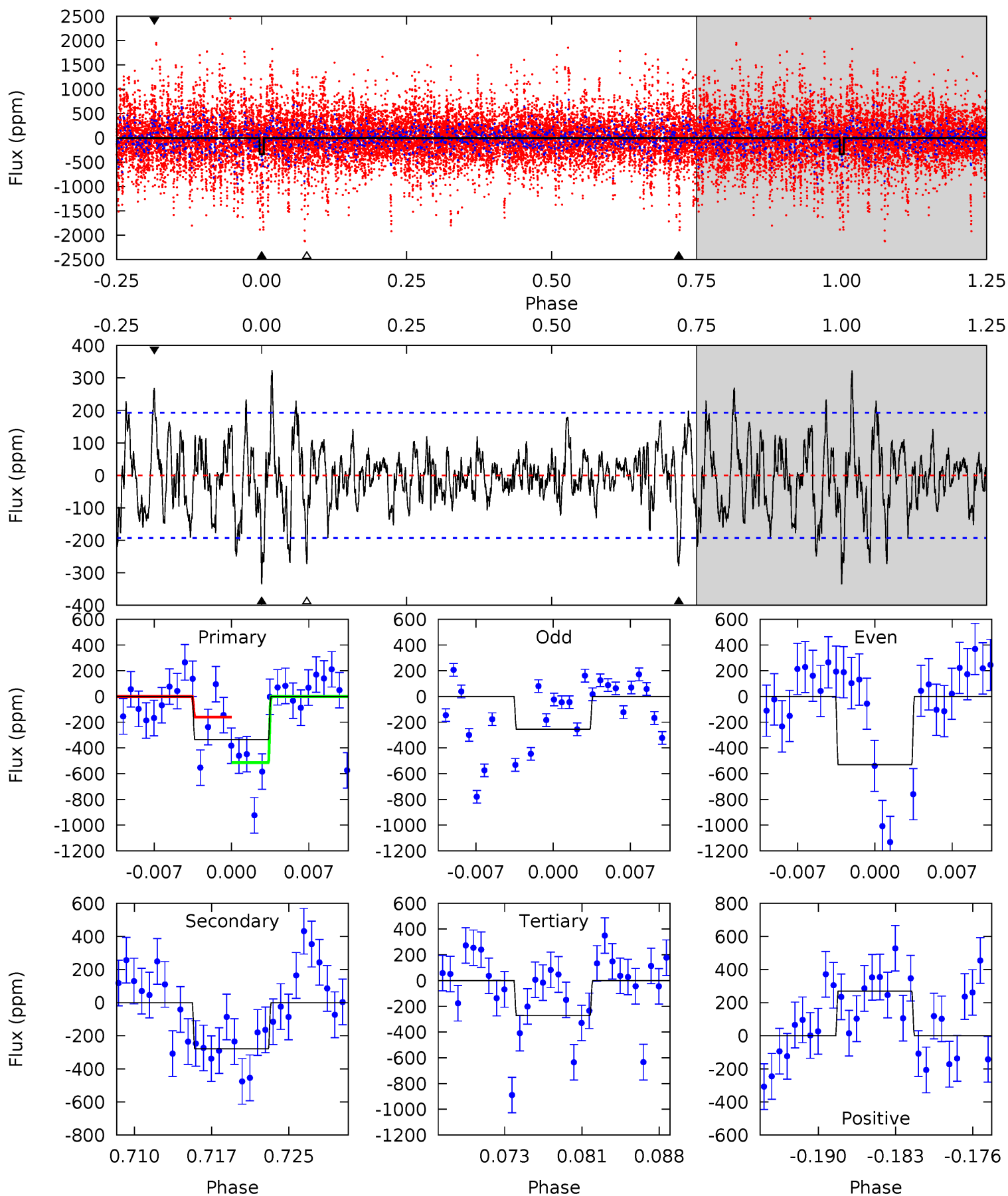
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.9	12.7	11.0	14.5	5.20	2.87	3.69	6.89	3.35	1.71	-1.83	1.21	0.74	0.45	1.80



Alt Model-Shift Uniqueness Test

009393006-03, P = 149.607715 Days, E = 37.652654 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.83	7.35	7.17	7.11	5.09	2.68	2.19	1.65	1.72	0.18	0.24	3.70	-3.24	0.49	4.63



Stellar Parameters For KIC 009393006

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009393006-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-619 ± 49	$3.85^{+1.04}_{-1.07}$	482^{+21}_{-25}	4966^{+784}_{-476}	6987^{+6506}_{-2724}
Alt.	-279 ± 38	$1.57^{+1.01}_{-0.88}$	480^{+23}_{-22}	6256^{+4134}_{-1340}	19058^{+86244}_{-12210}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming A=0.3)

A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

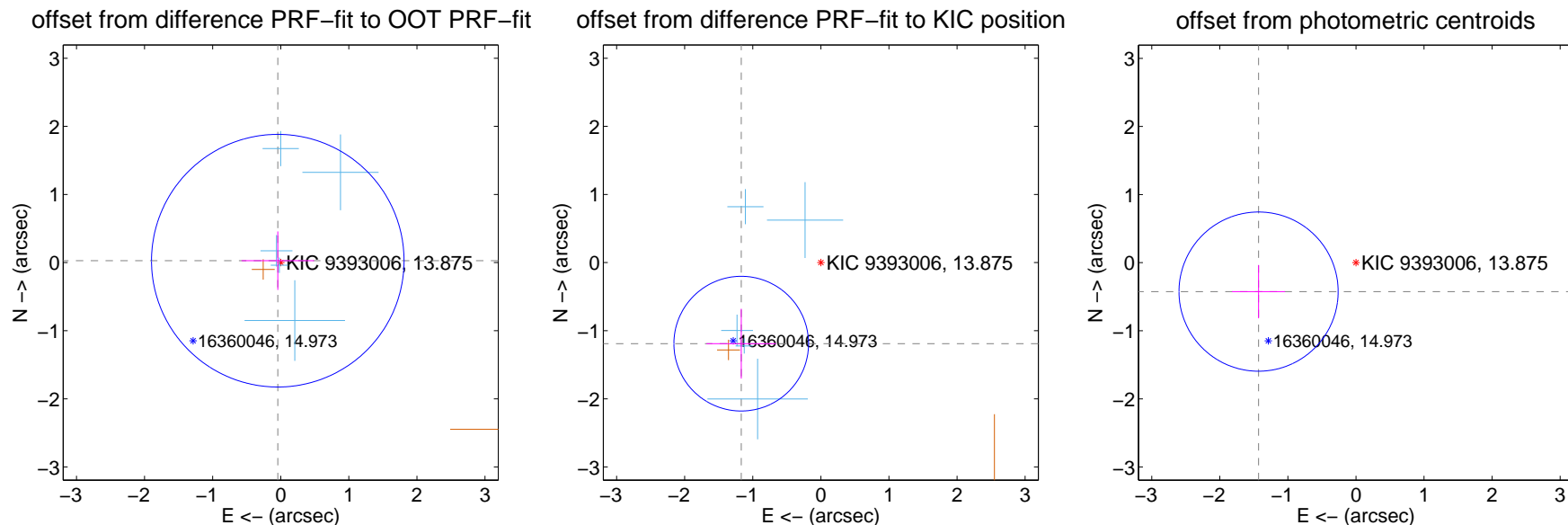
DV Centroid Data

Supplemental centroid analysis for 009393006-03. Kepler magnitude: 13.88. Transit SNR 6.79

There are 5 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.72 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.052 ± 0.618	0.08	0.044 ± 0.532	0.028 ± 0.429
PRF-fit source offset from KIC position	1.669 ± 0.330	5.06	1.170 ± 0.511	-1.190 ± 0.512
photometric centroid source offset	1.49 ± 0.39	3.83	1.43 ± 0.39	-0.43 ± 0.39



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

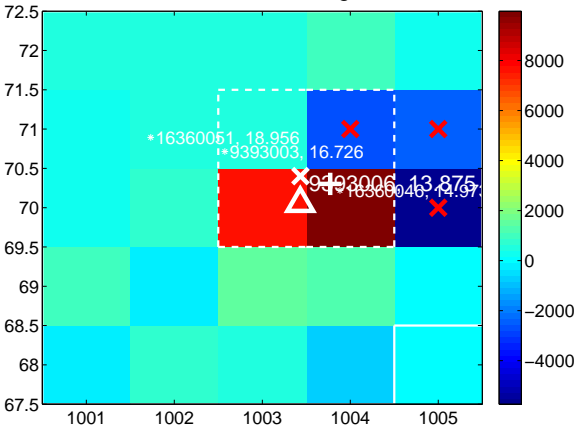
Q1 no difference image



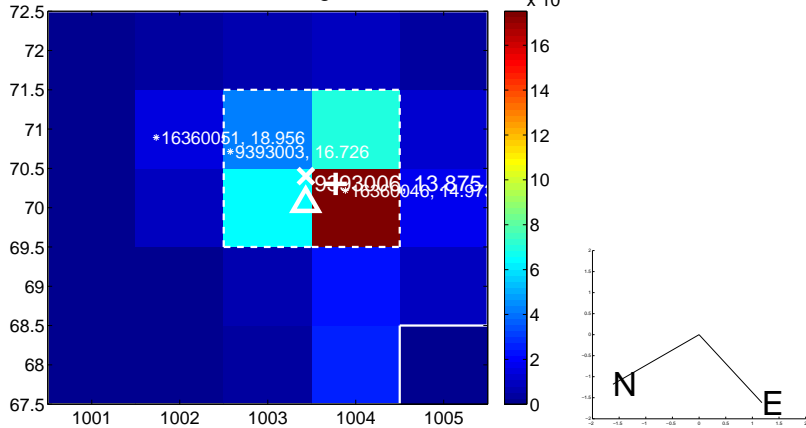
Q1 no OOT image



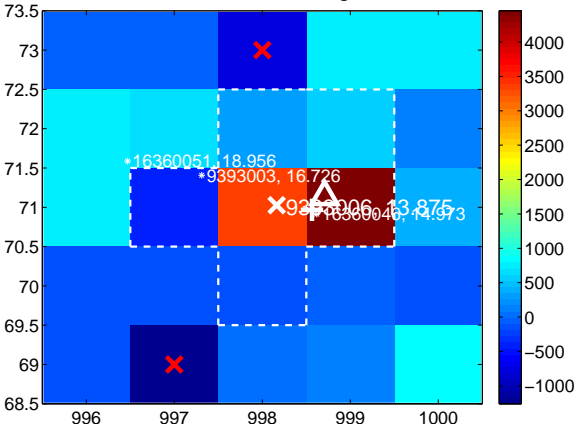
Q2 difference image



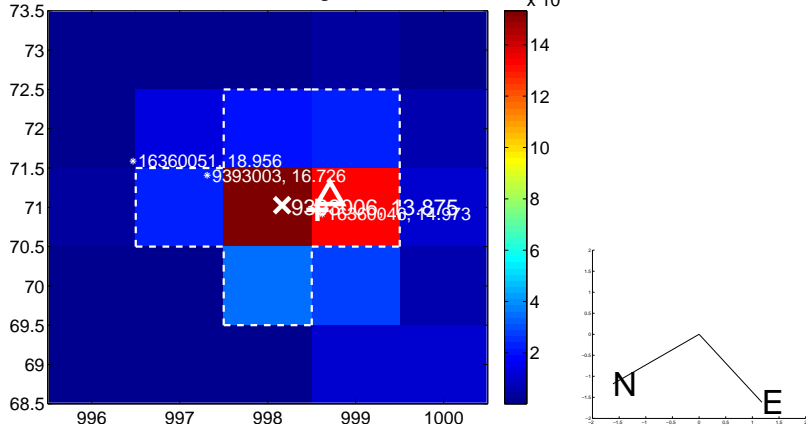
Q2 OOT image



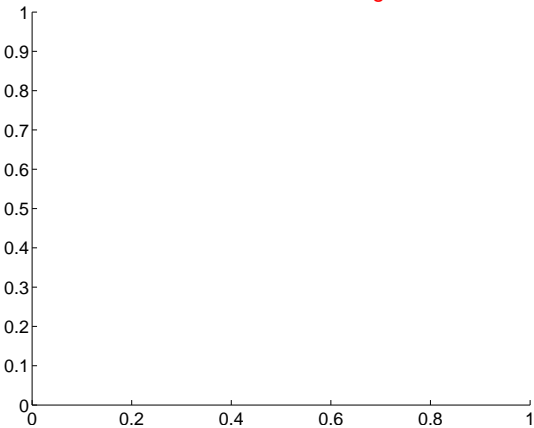
Q3 difference image



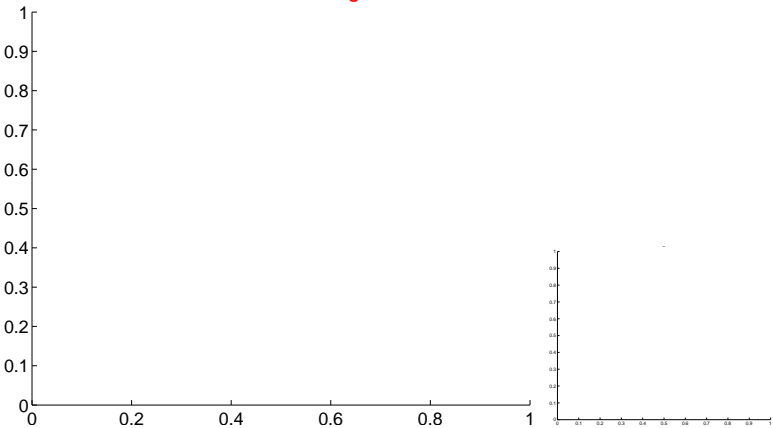
Q3 OOT image



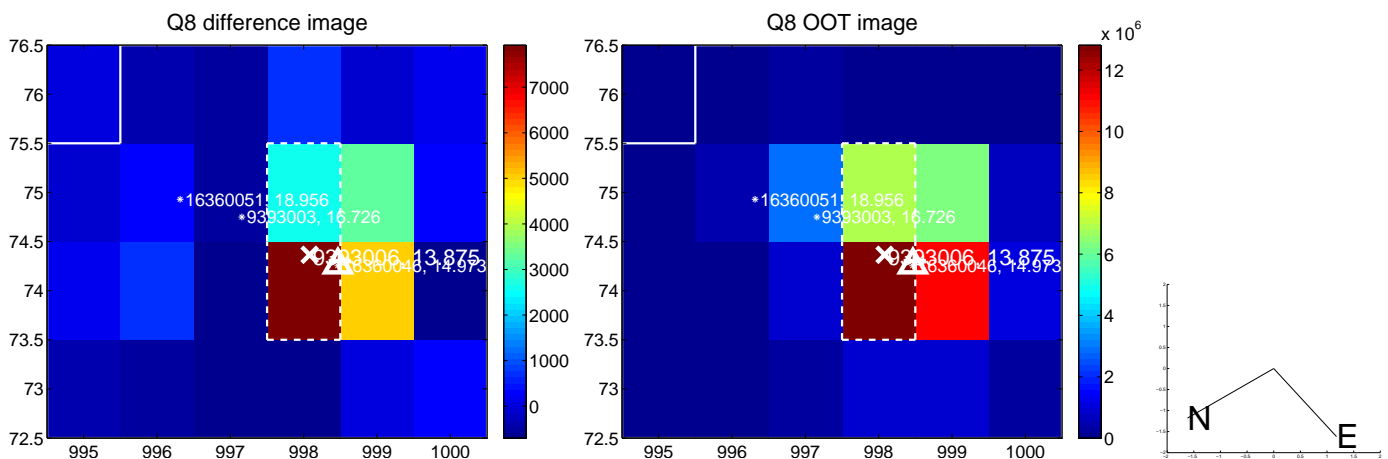
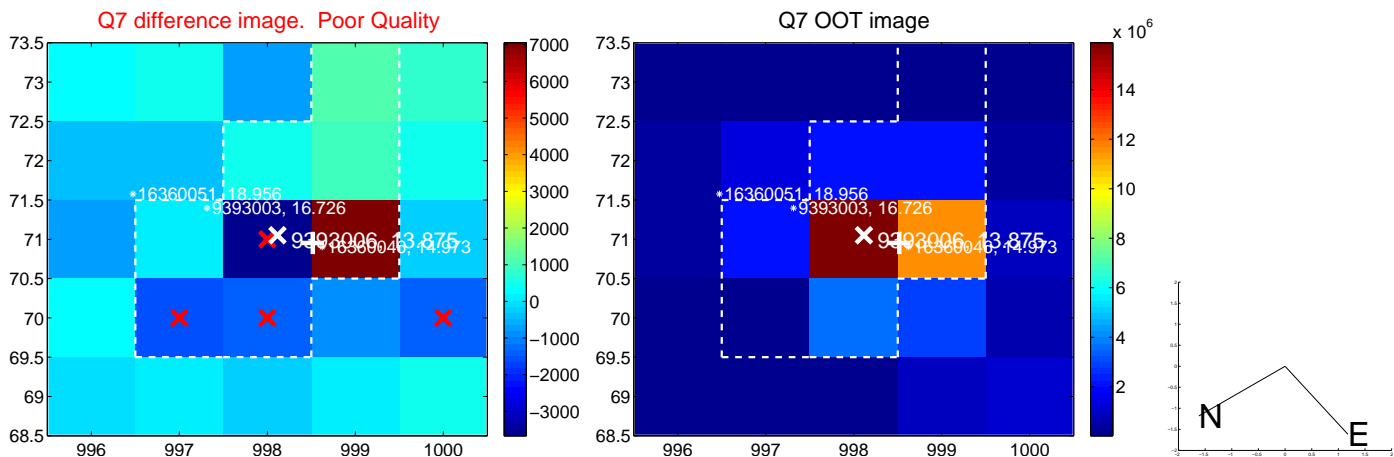
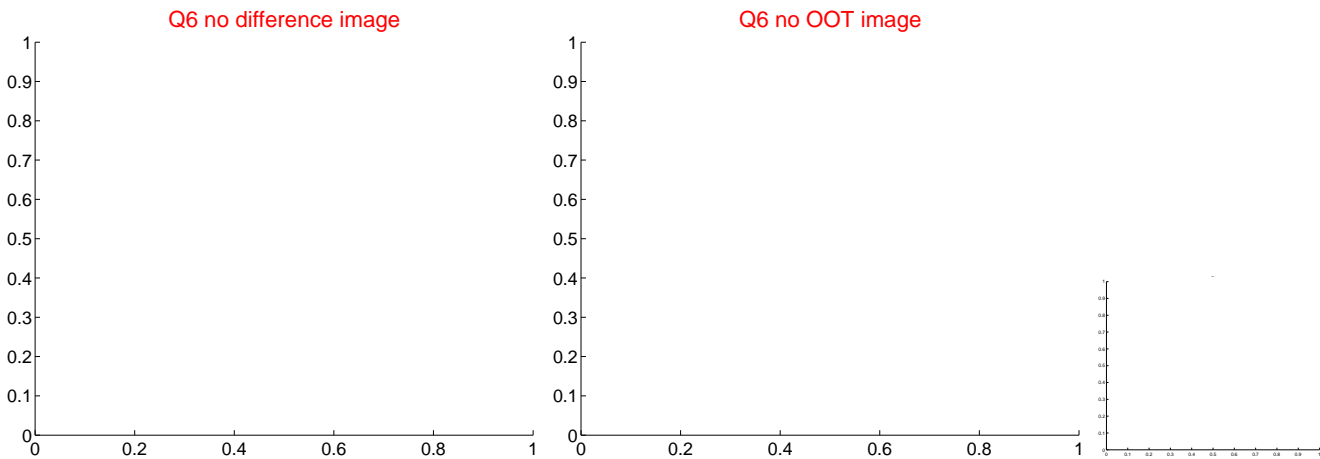
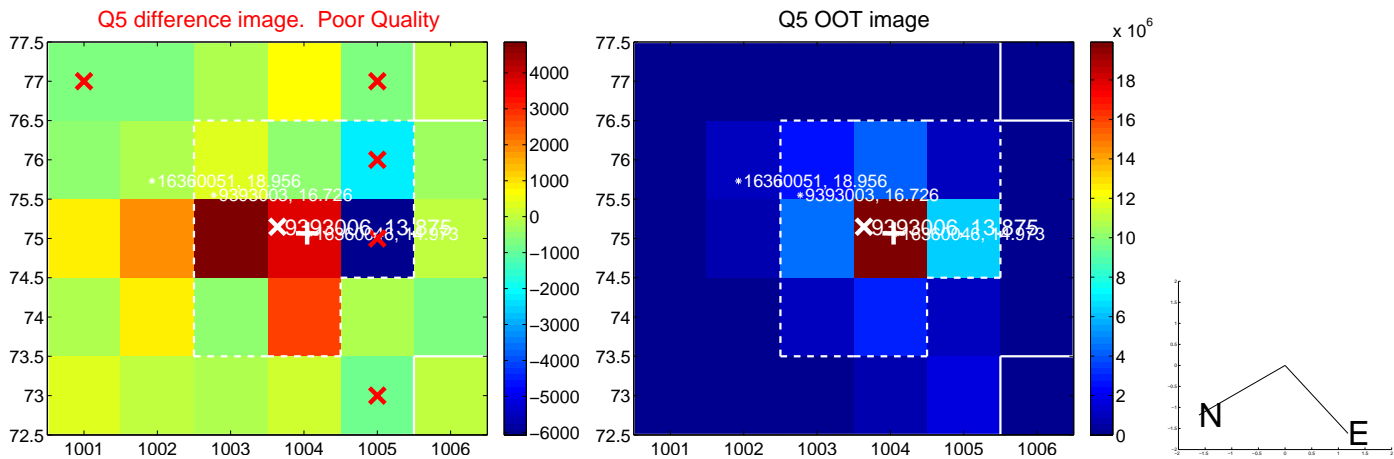
Q4 no difference image



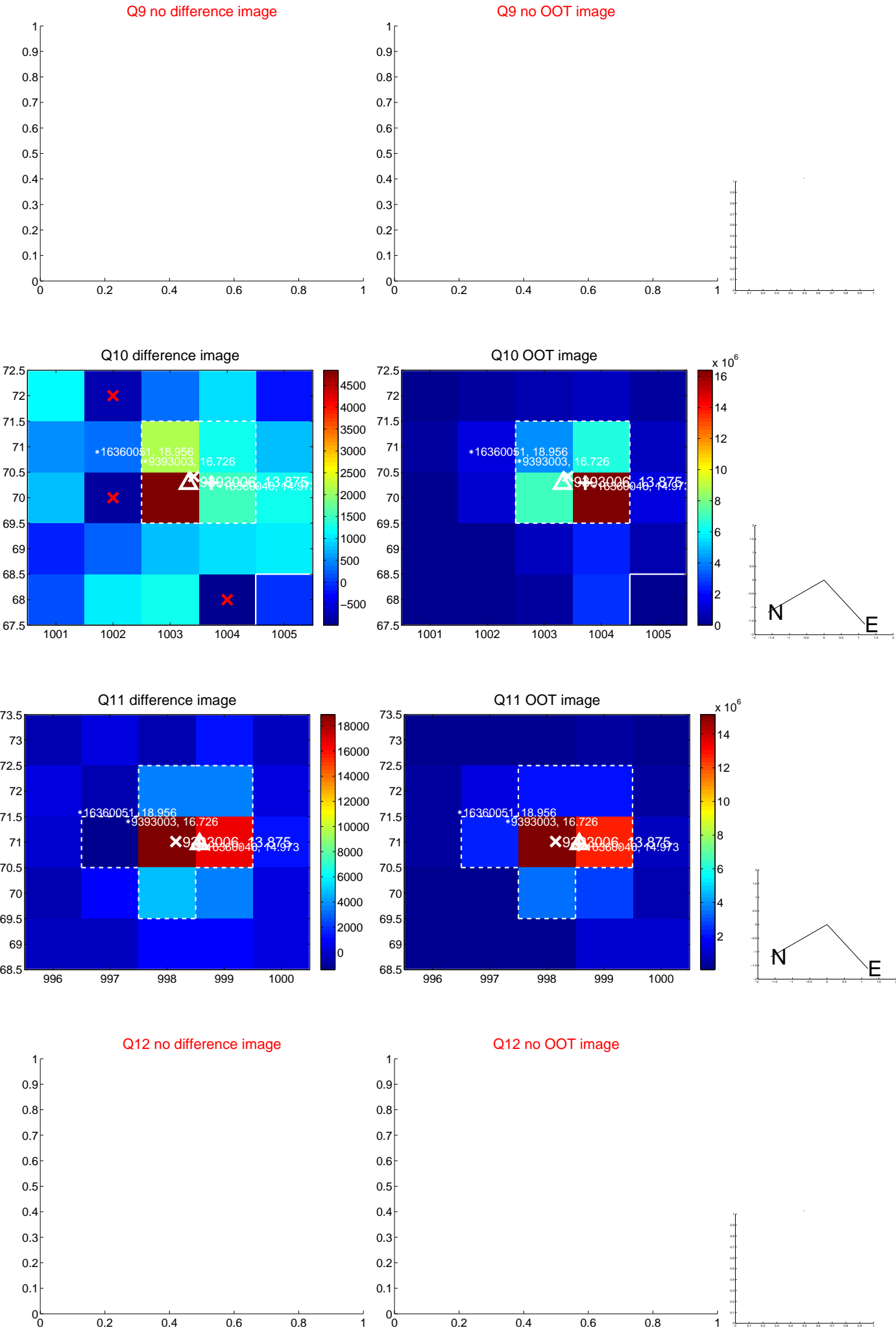
Q4 no OOT image



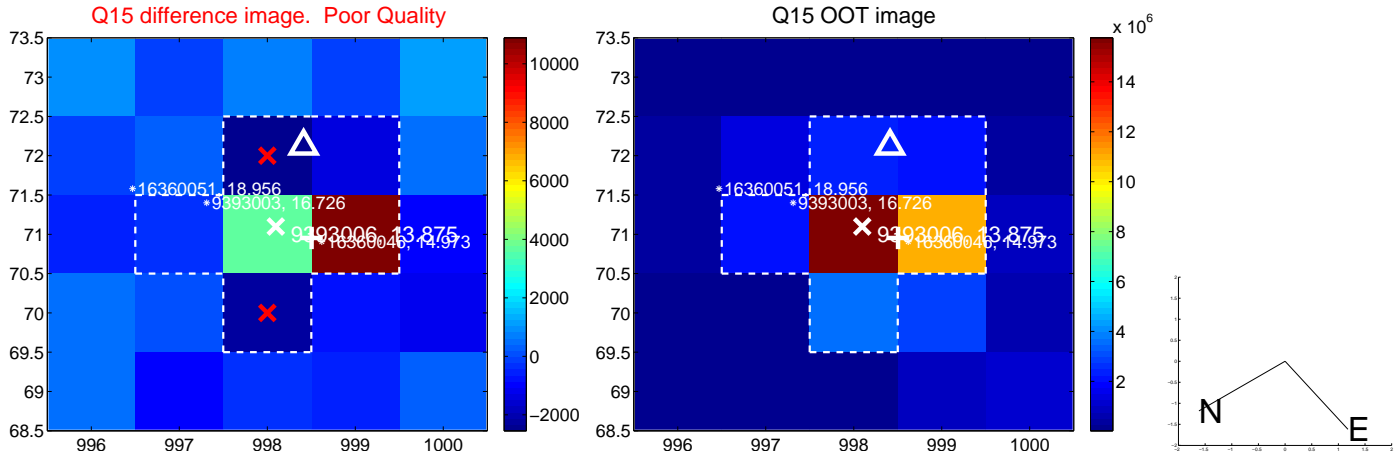
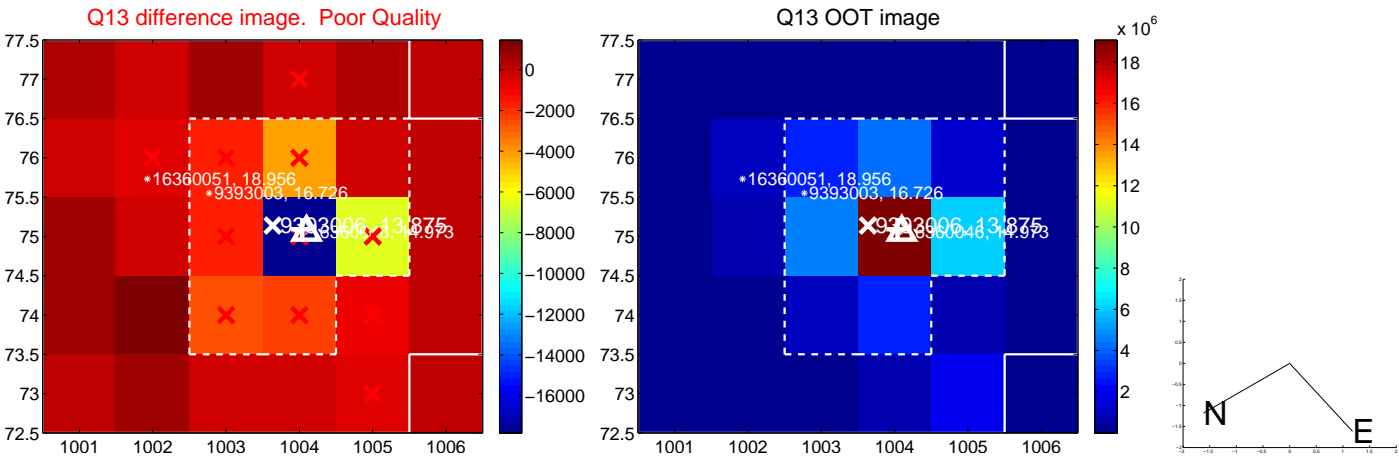
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



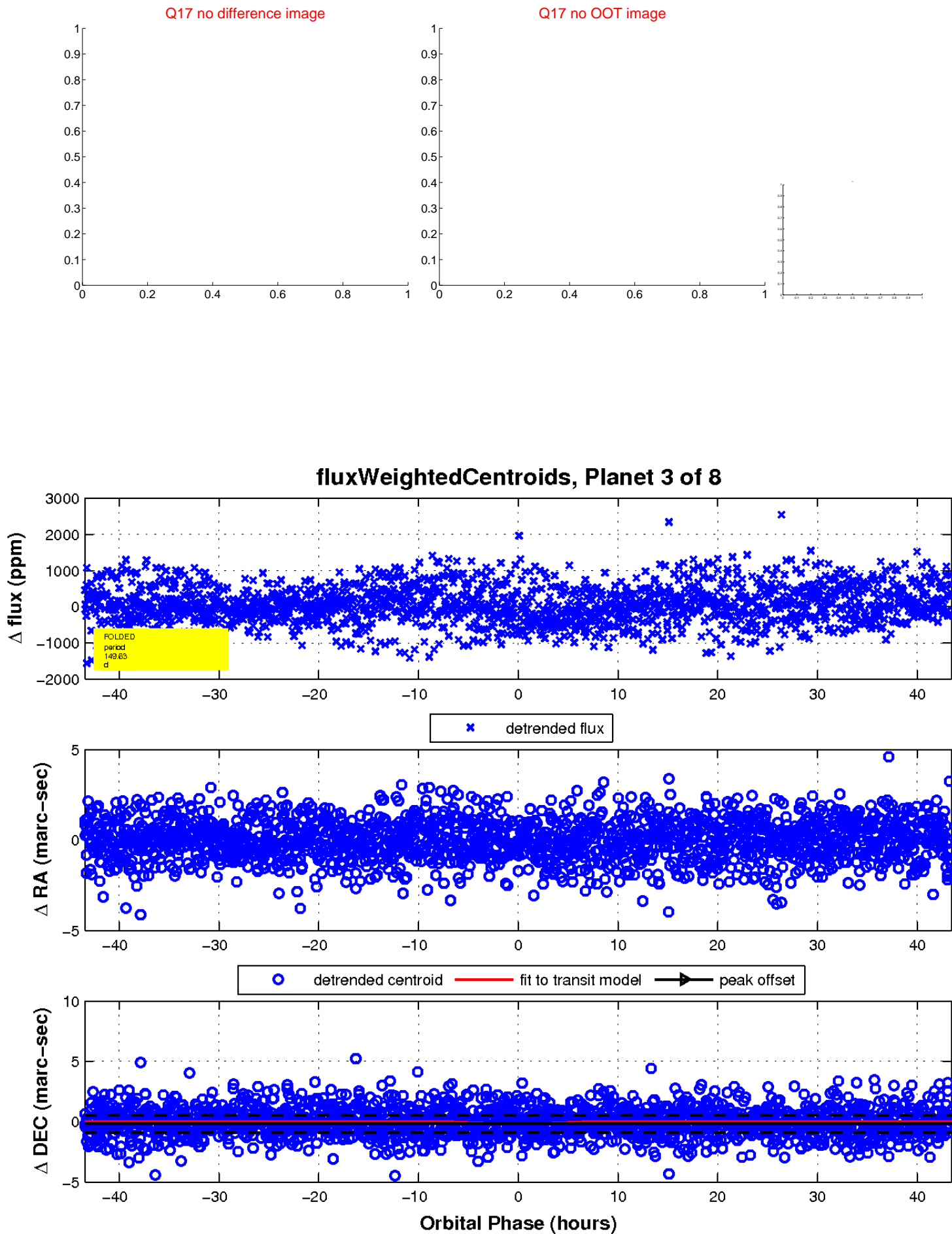
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

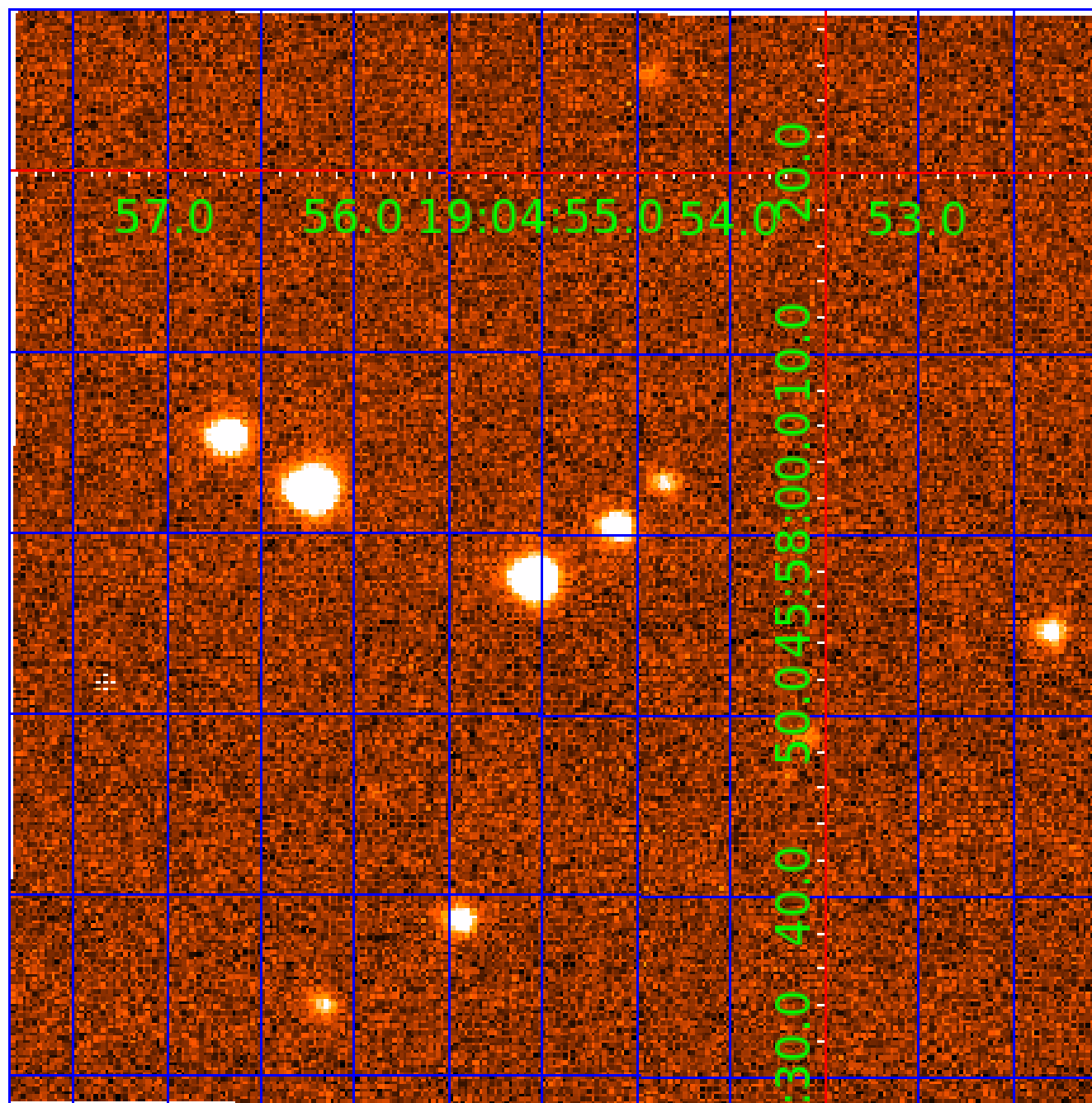


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009393006

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009393006-01	OBS	No	1.321269	132.535802	44.6	4.893	7.7	7.4	1.00	5780	0.66	1800.05
009393006-02	OBS	No	3.487834	132.373899	207.6	13.803	8.5	10.6	1.00	5780	2.11	493.40
009393006-03	OBS	No	149.630074	187.157870	802.9	14.505	15.1	6.8	1.00	5780	3.83	3.29
009393006-05	OBS	No	54.467839	132.774777	456.6	6.422	9.2	7.6	1.00	5780	2.23	12.64
009393006-06	OBS	No	78.059390	201.477510	632.6	5.368	9.7	8.0	1.00	5780	2.61	7.82
009393006-07	OBS	No	21.026194	140.546359	258.2	11.345	8.2	6.7	1.00	5780	1.74	44.97

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009393006-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_KIC_POS
009393006-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

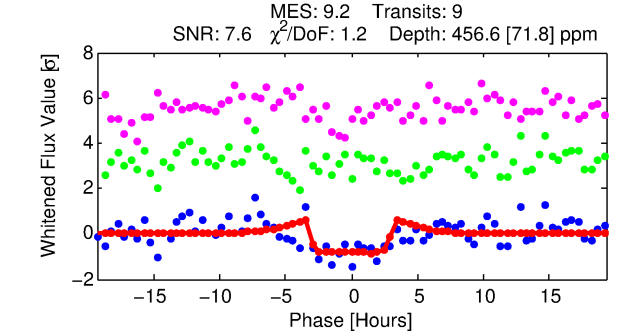
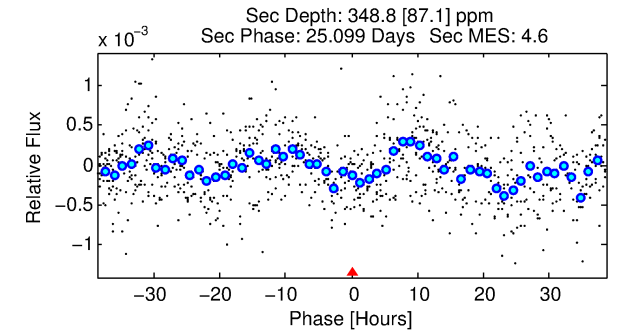
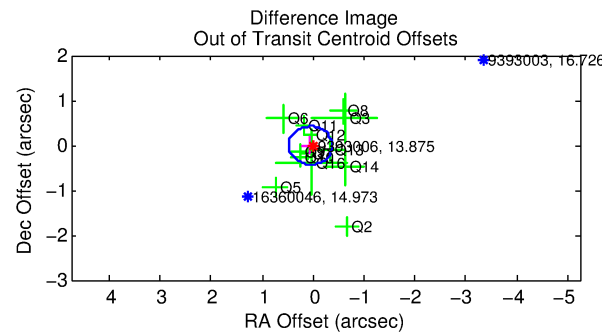
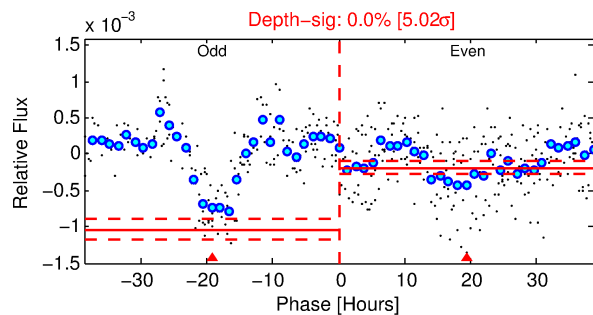
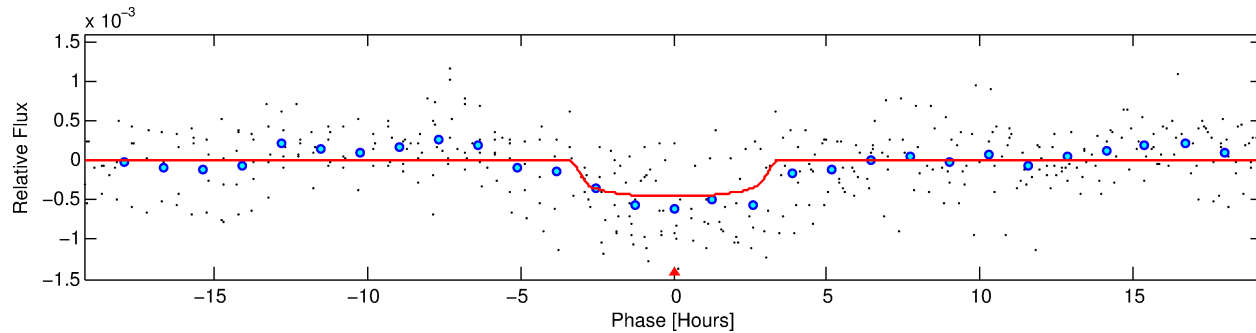
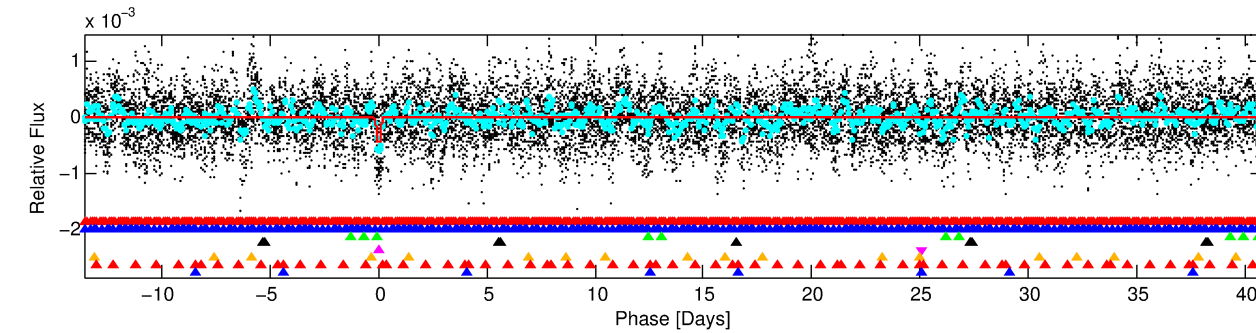
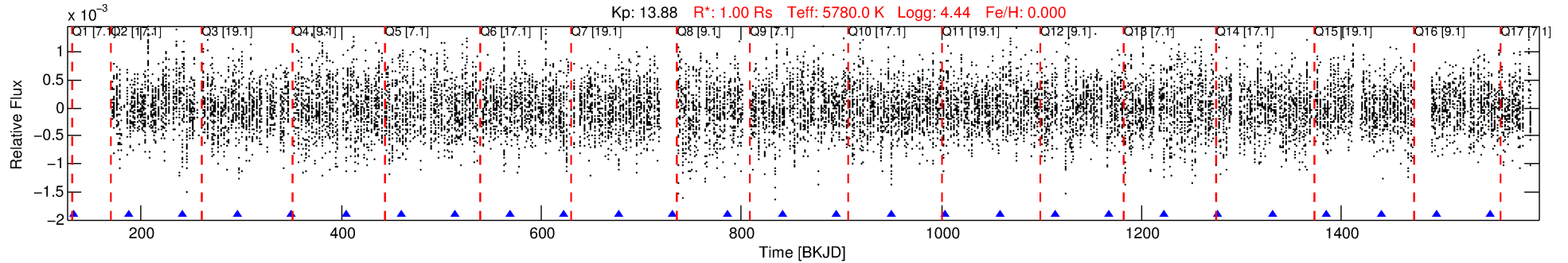
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009393006-05

No Significant Match Found

DV One-Page Summary

KIC: 9393006 Candidate: 5 of 8 Period: 54.468 d



DV Fit Results:

Period = 54.46784 [0.00075] d
Epoch = 132.7748 [0.0121] BKJD
 R_p/R^* = 0.0204 [0.0199]
 a/R^* = 52.82 [222.73]
 b = 0.61 [4.32]
 S_{eff} = 12.64 [0.00]
 T_{eq} = 481 [0] K
 R_p = 2.23 [2.17] R_e
 a = 0.2813 [0.0000] AU
 A_g = 3053.36 [5996.64] [0.51 σ]
 T_{eff} = 5526 [2713] K [1.86 σ]

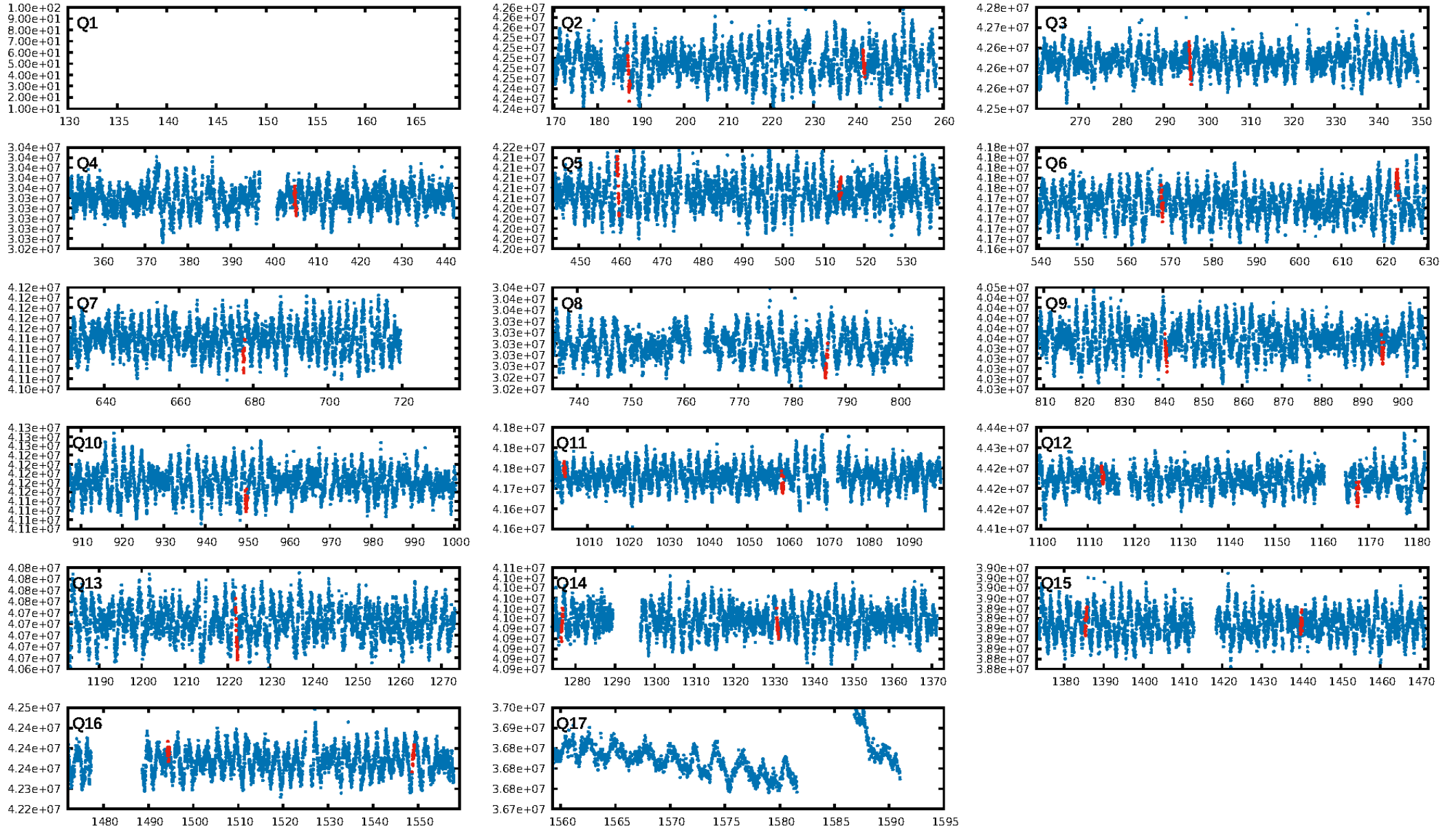
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [61.57 σ]
LongPeriod-sig: 100.0% [67.65 σ]
ModelChiSquare2-sig: 11.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.73e-09
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: -2.893
Centroid-sig: N/A
Centroid-so: 1.375 arcsec [2.85 σ]
OotOffset-rm: 0.049 arcsec [0.35 σ]
KicOffset-rm: 1.647 arcsec [10.39 σ]
OotOffset-st: 4/3/3/3 [13]
KicOffset-st: 4/3/3/3 [13]
DiffImageQuality-fgm: 0.77 [10/13]
DiffImageOverlap-fno: 0.00 [0/15]

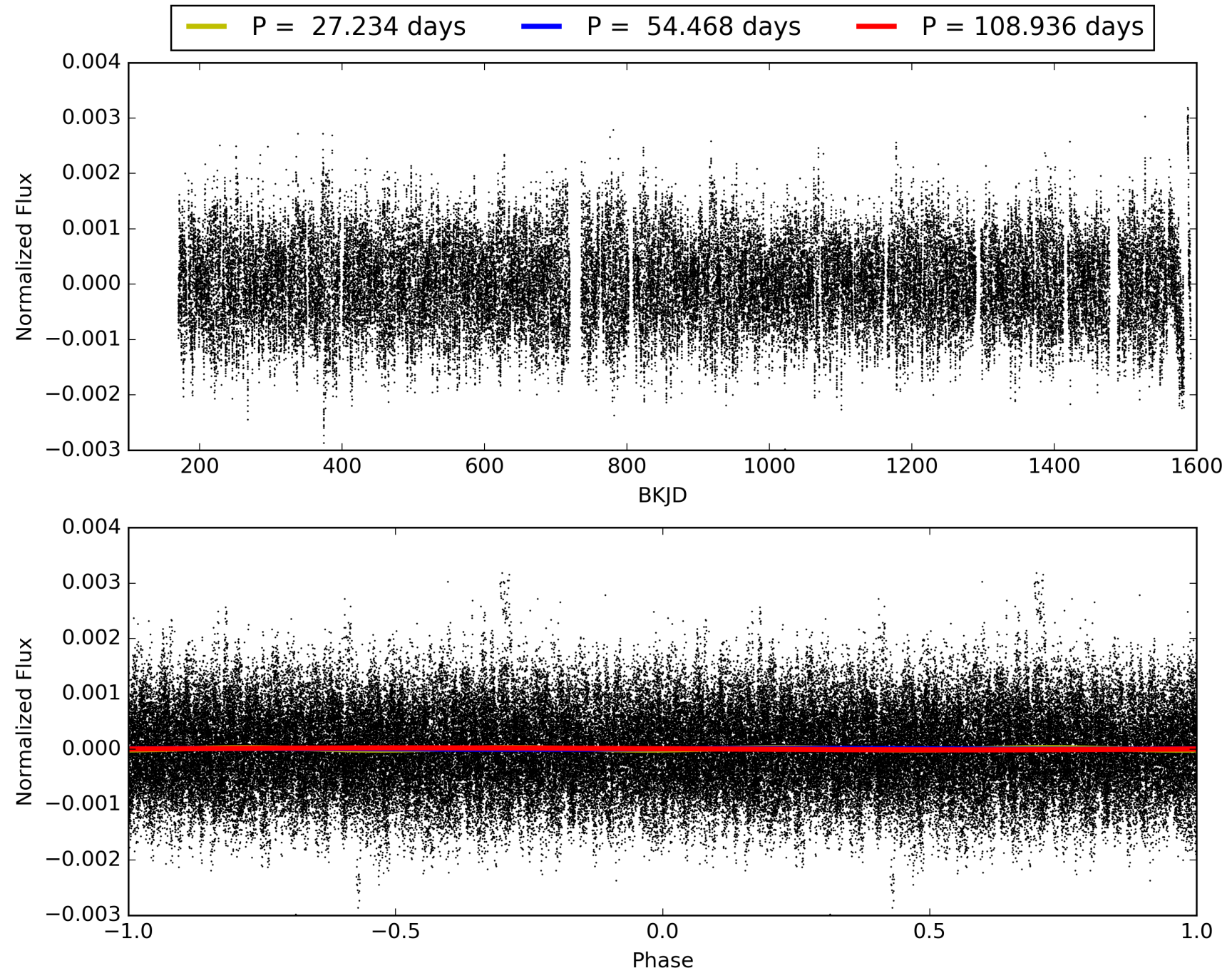
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:51:58 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009393006-05, PDC Light Curves

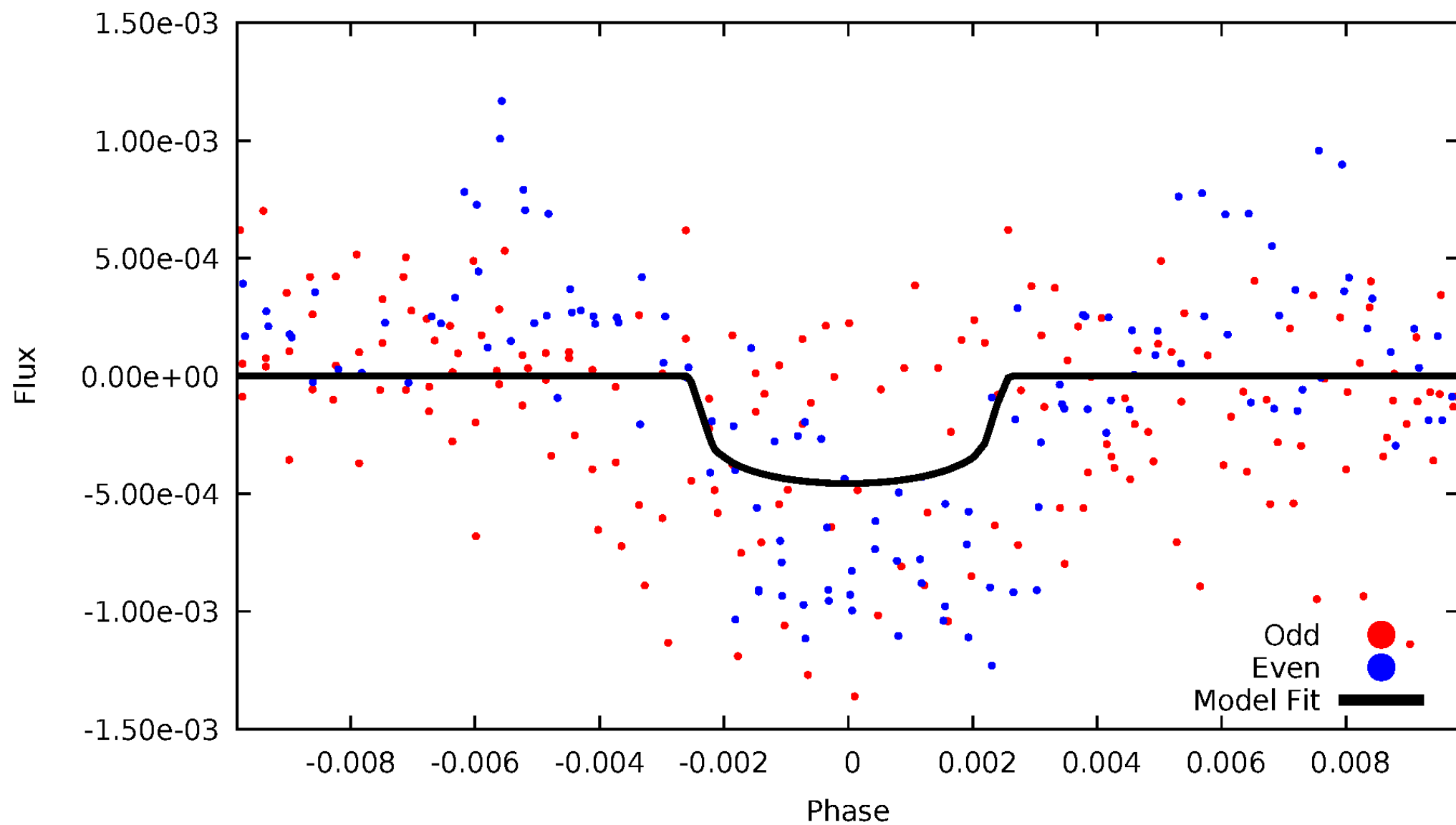


TCE 009393006-05



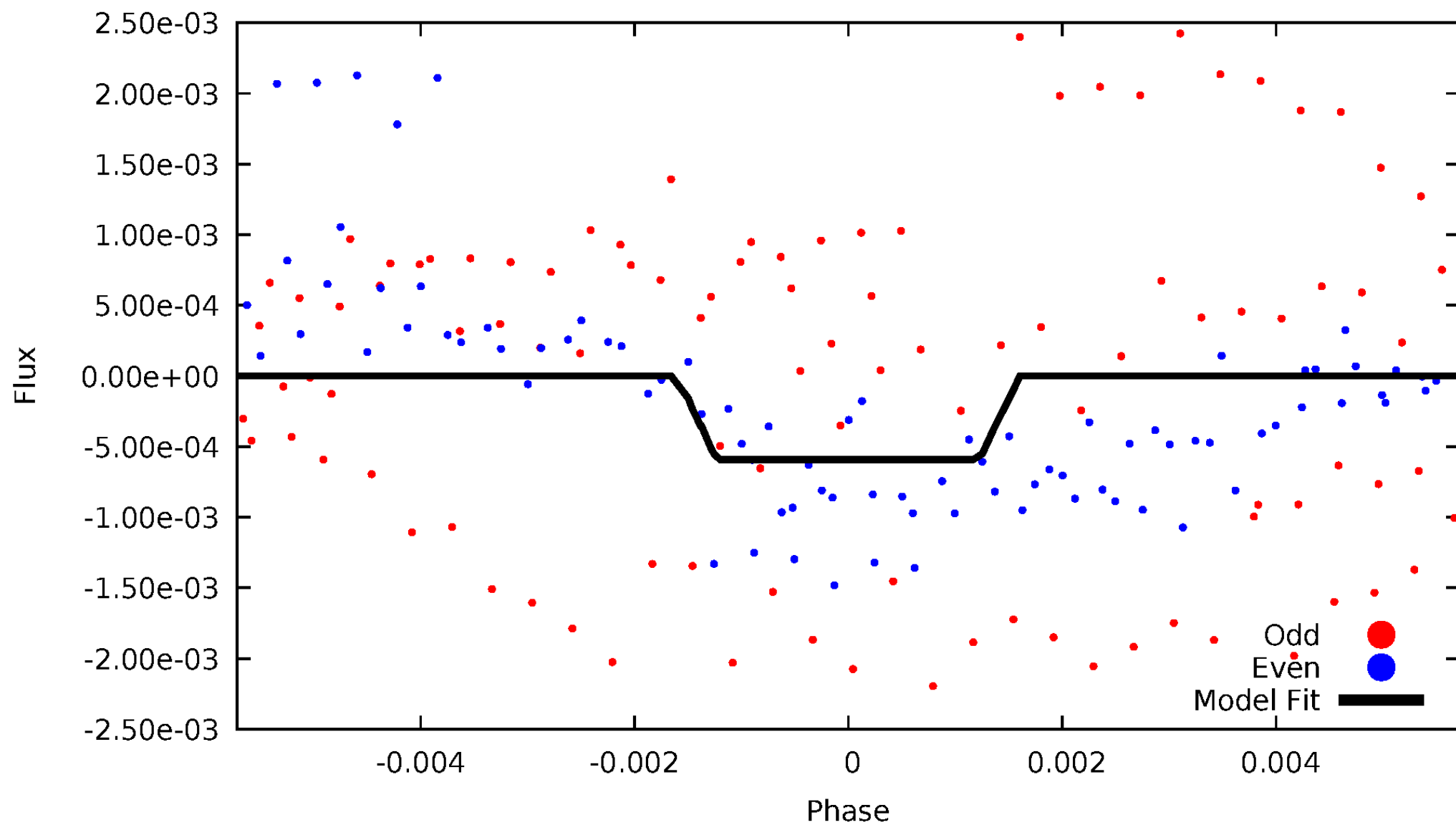
DV Odd/Even

TCE 009393006-05



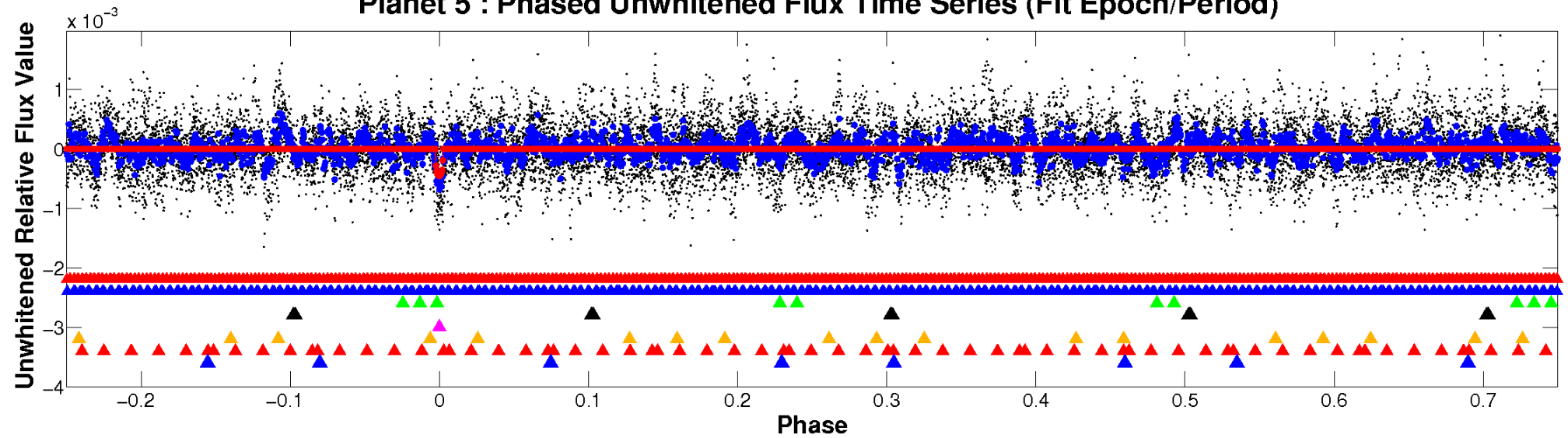
ALT Odd/Even

TCE 009393006-05

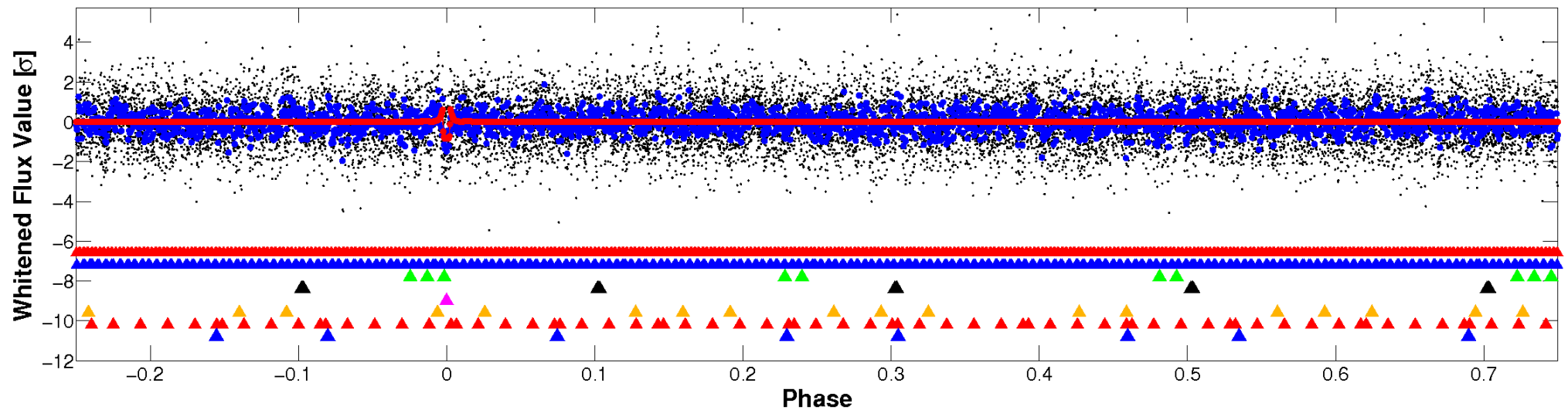


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

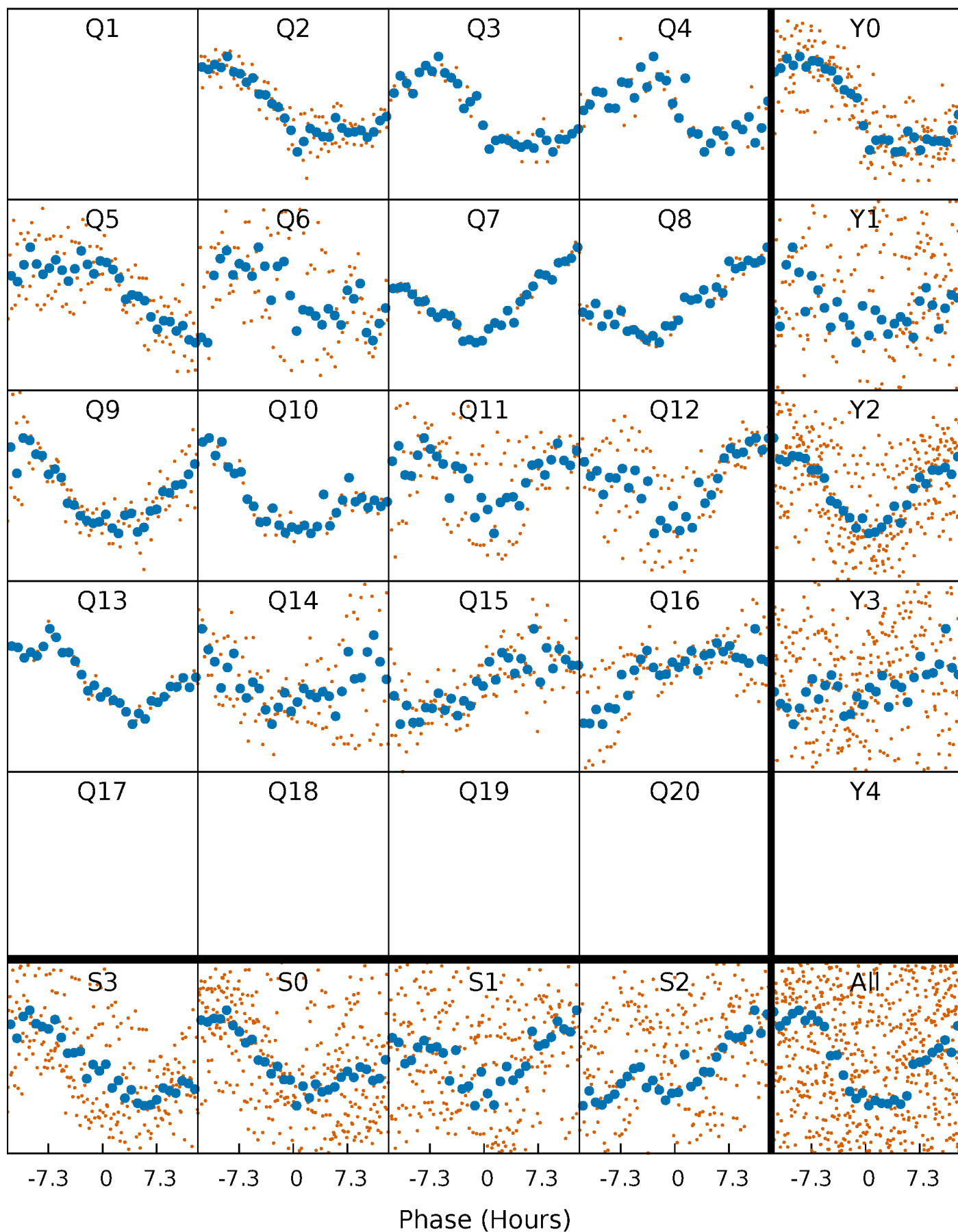


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



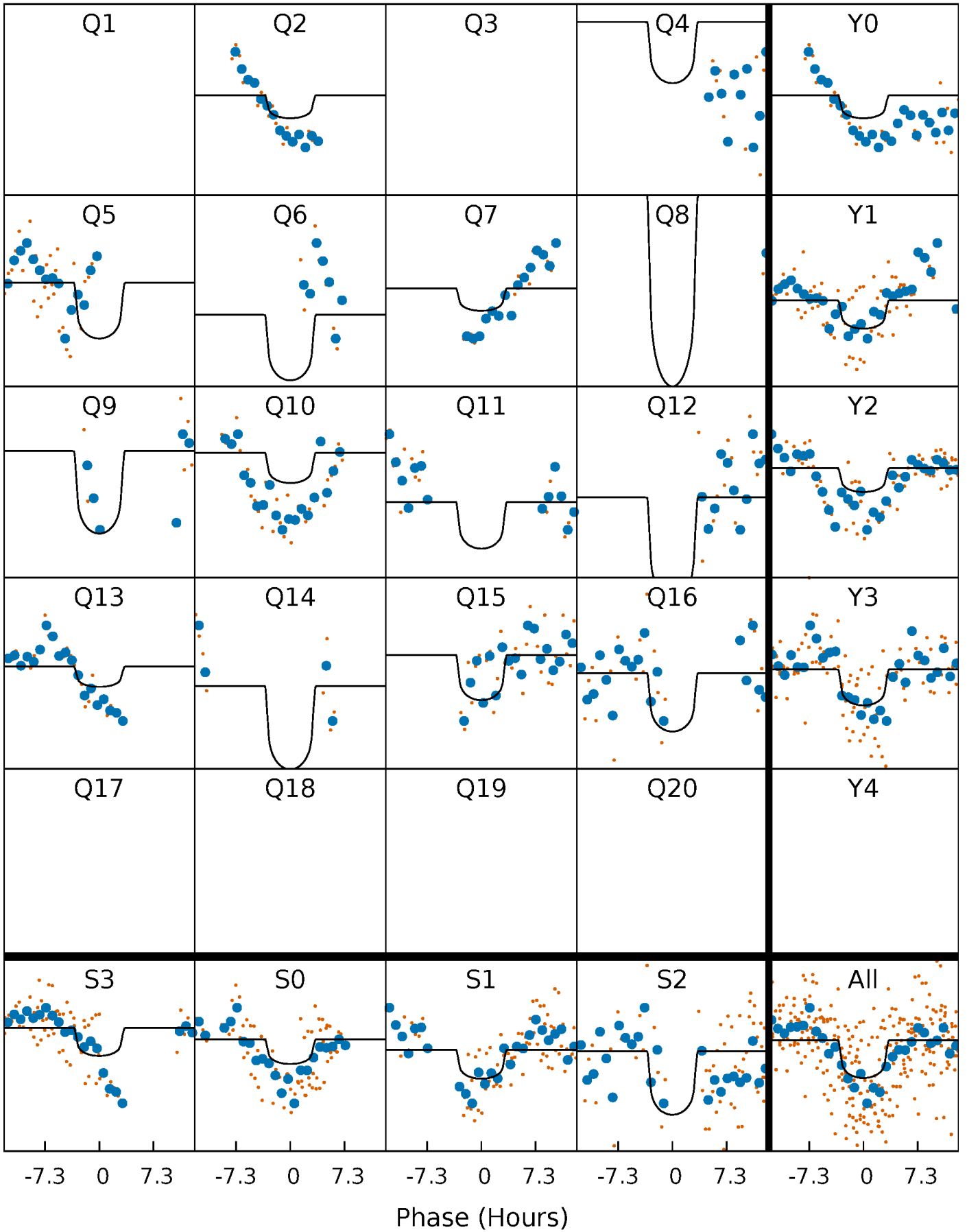
PDC Quarter-Phased Transit Curves

TCE 009393006-05 $P = 54.467839$ Days $T_0 = 132.774777$ (BKJD)



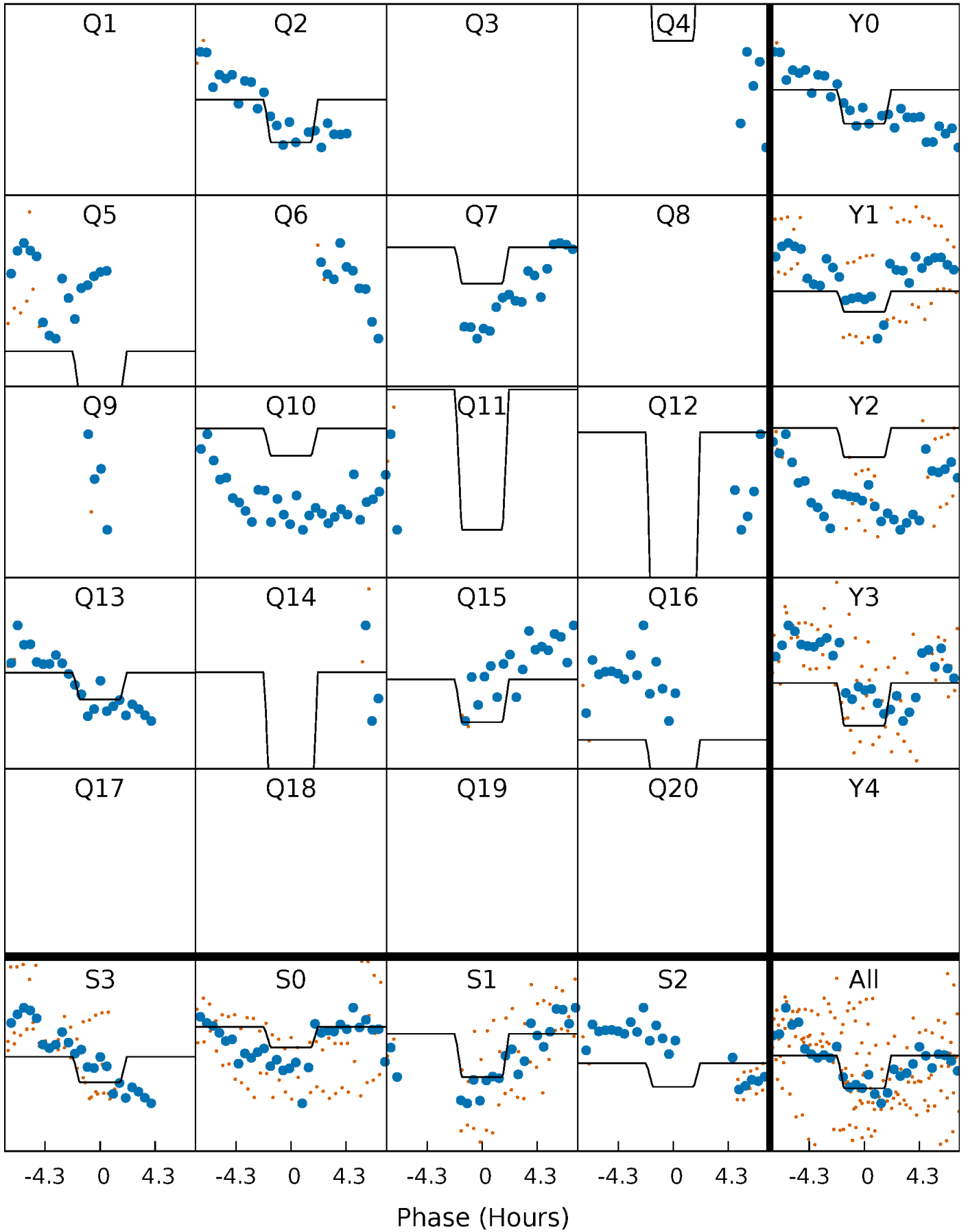
DV Quarter-Phased Transit Curves

TCE 009393006-05 $P = 54.467839$ Days $T_0 = 132.774777$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

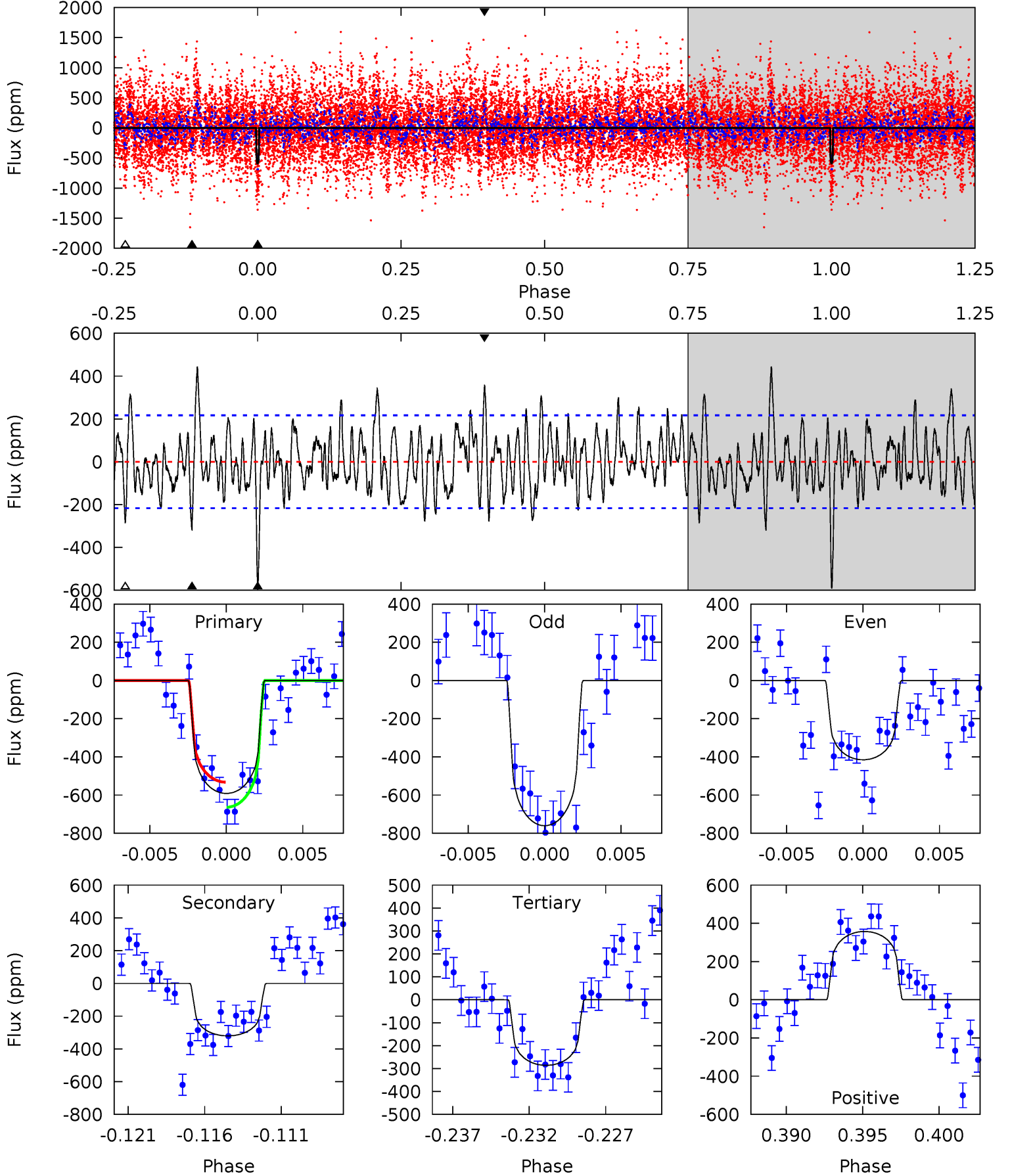
TCE 009393006-05 $P = 54.466409$ Days $T_0 = 132.758569$ (BKJD)



DV Model-Shift Uniqueness Test

009393006-05, P = 54.467839 Days, E = 132.774777 Days

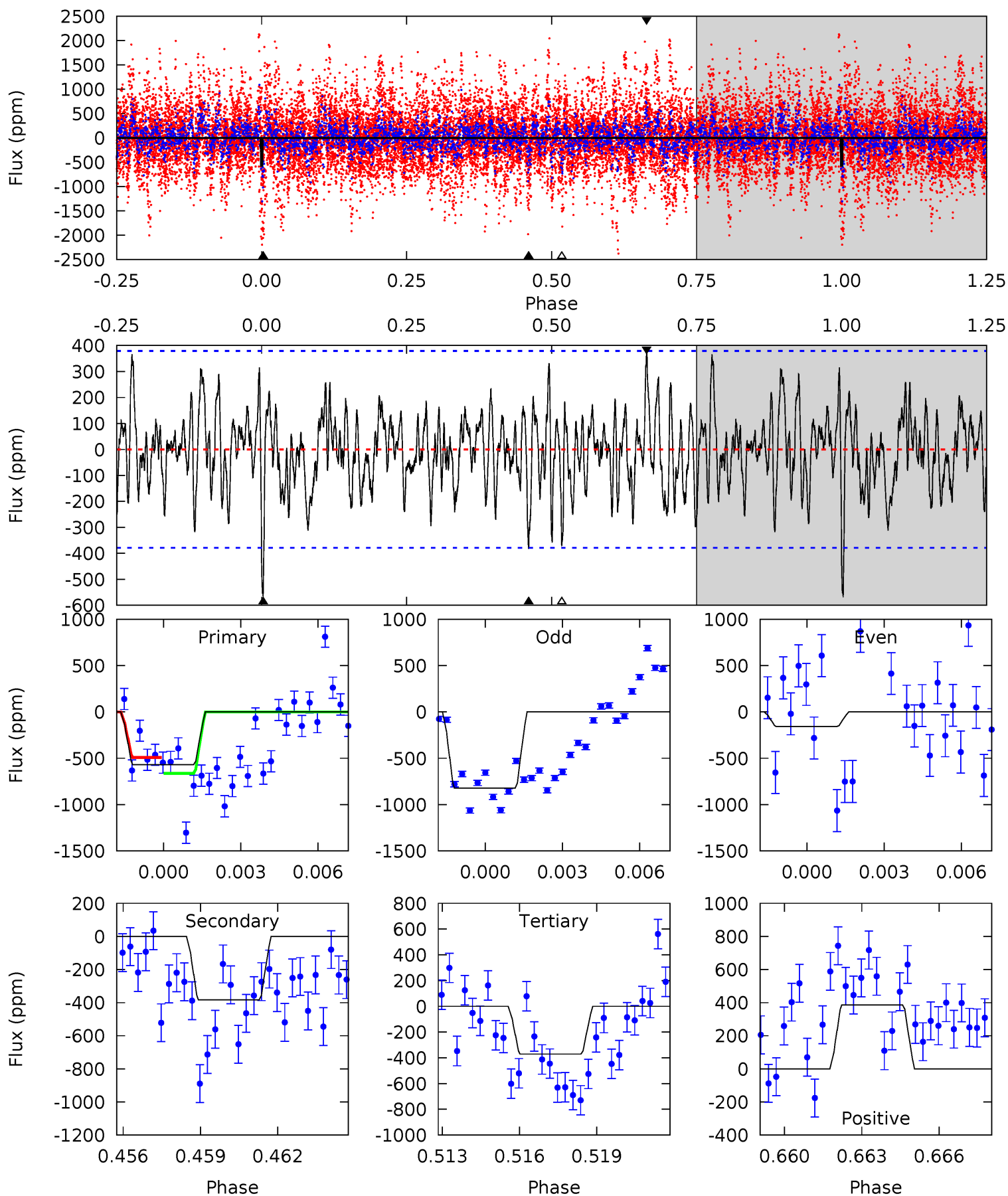
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	7.60	6.78	8.47	5.15	2.79	2.83	7.24	5.55	0.82	-0.87	4.11	1.63	0.43	1.55



Alt Model-Shift Uniqueness Test

009393006-05, P = 54.466409 Days, E = 132.758569 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.88	5.30	5.13	5.35	5.25	2.97	1.71	2.75	2.54	0.16	-0.05	4.55	0.88	0.40	1.19



Stellar Parameters For KIC 009393006

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009393006-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-320 ± 42	$2.49^{+2.12}_{-1.45}$	672^{+32}_{-32}	5166^{+2883}_{-1086}	2255^{+10811}_{-1602}
Alt.	-383 ± 72	$2.94^{+2.06}_{-1.78}$	672^{+33}_{-33}	4999^{+2930}_{-965}	1868^{+9415}_{-1229}

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
 A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

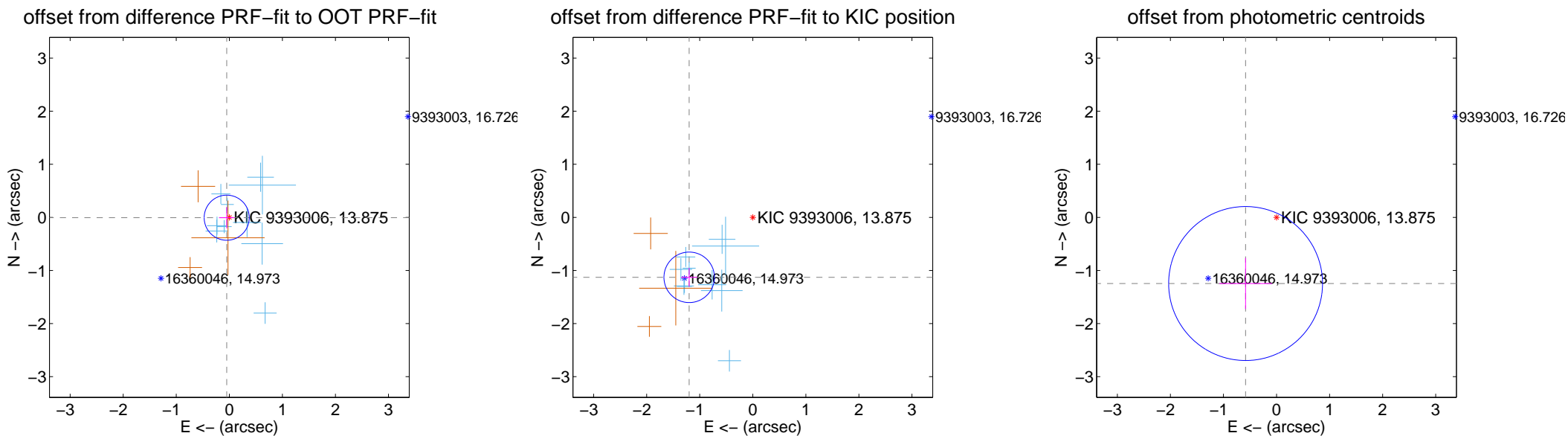
DV Centroid Data

Supplemental centroid analysis for 009393006-05. Kepler magnitude: 13.88. Transit SNR 7.59

There are 10 quarters with good PRF difference image offsets

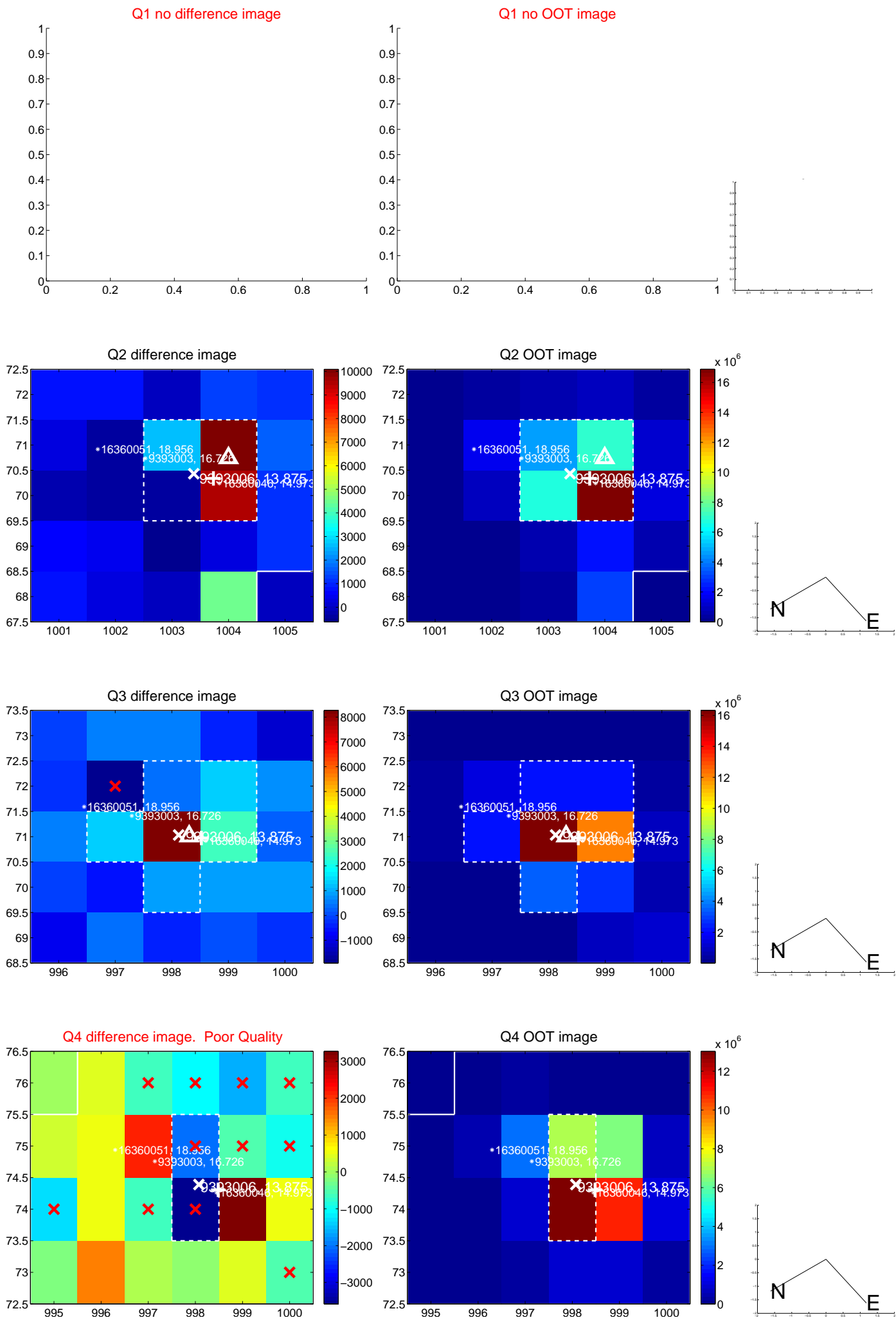
The direct PRF centroid is offset from the target star catalog position by about 1.71 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.049 ± 0.142	0.35	0.049 ± 0.145	-0.006 ± 0.201
PRF-fit source offset from KIC position	1.647 ± 0.159	10.39	1.199 ± 0.151	-1.129 ± 0.177
photometric centroid source offset	1.38 ± 0.48	2.85	0.58 ± 0.50	-1.25 ± 0.48

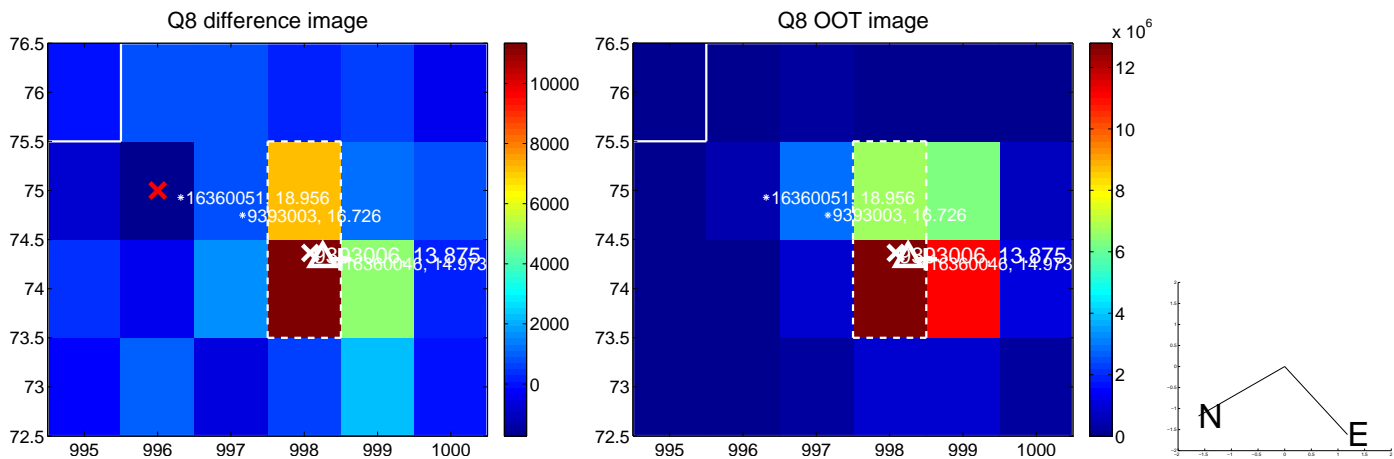
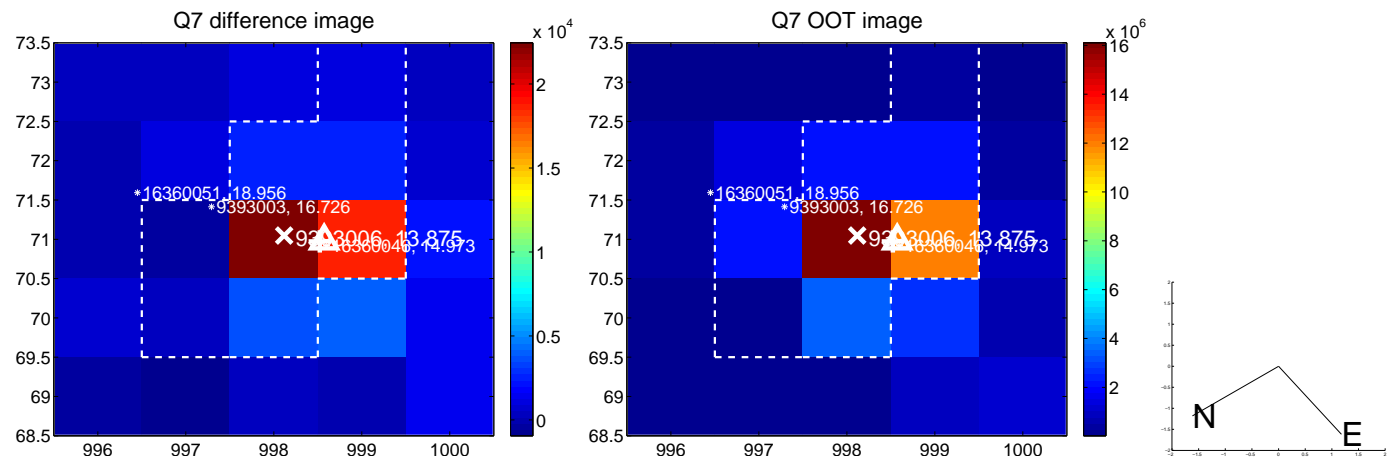
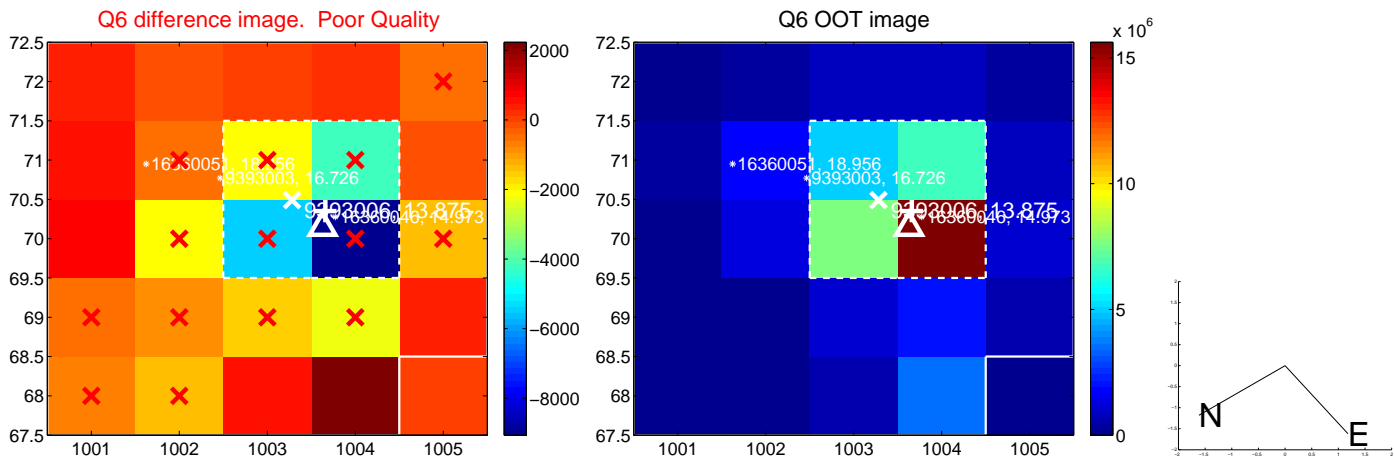
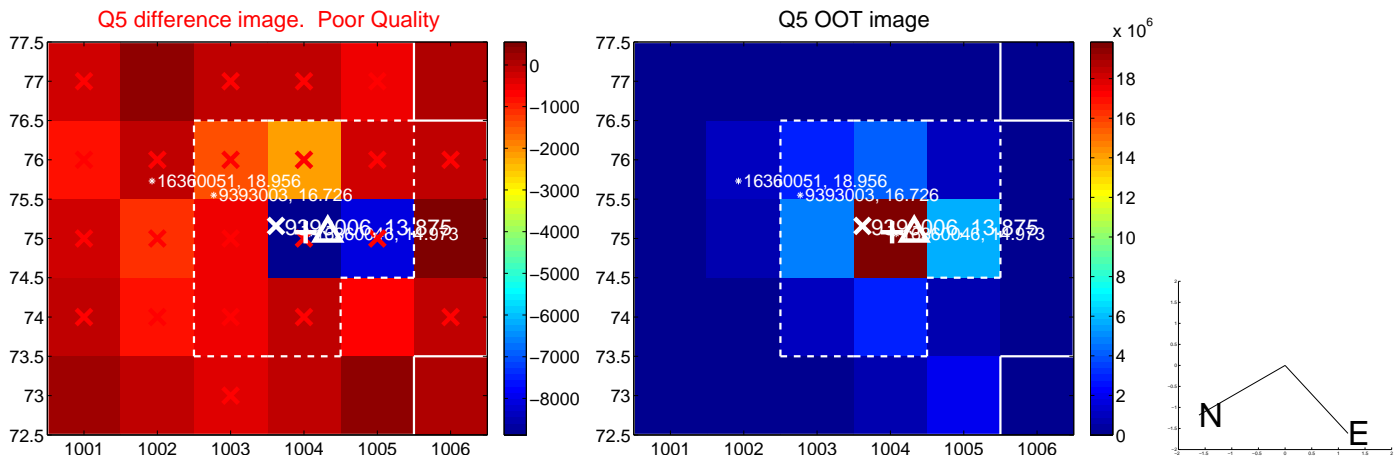


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

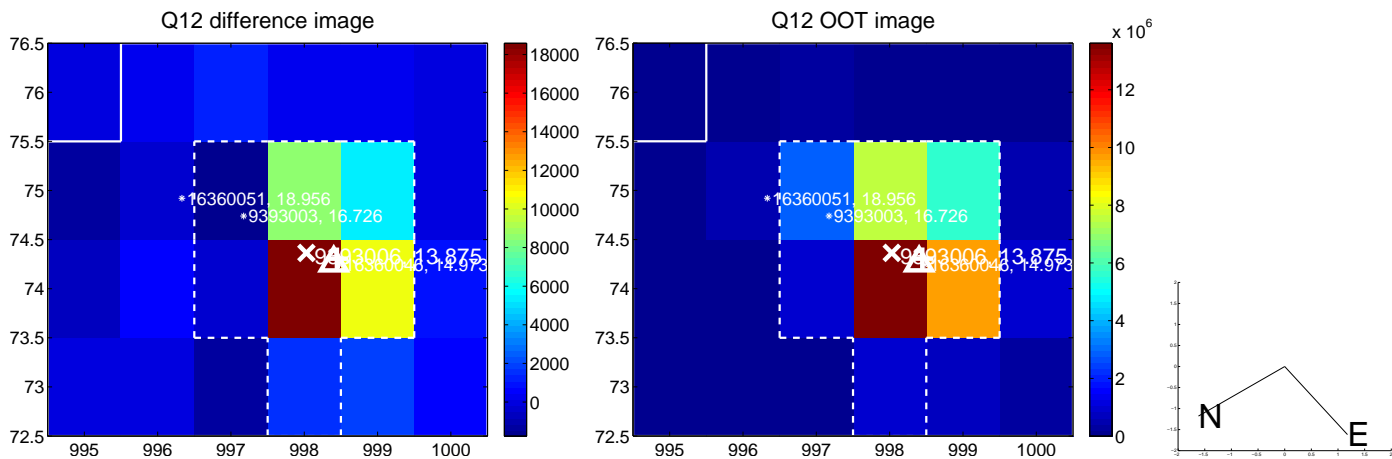
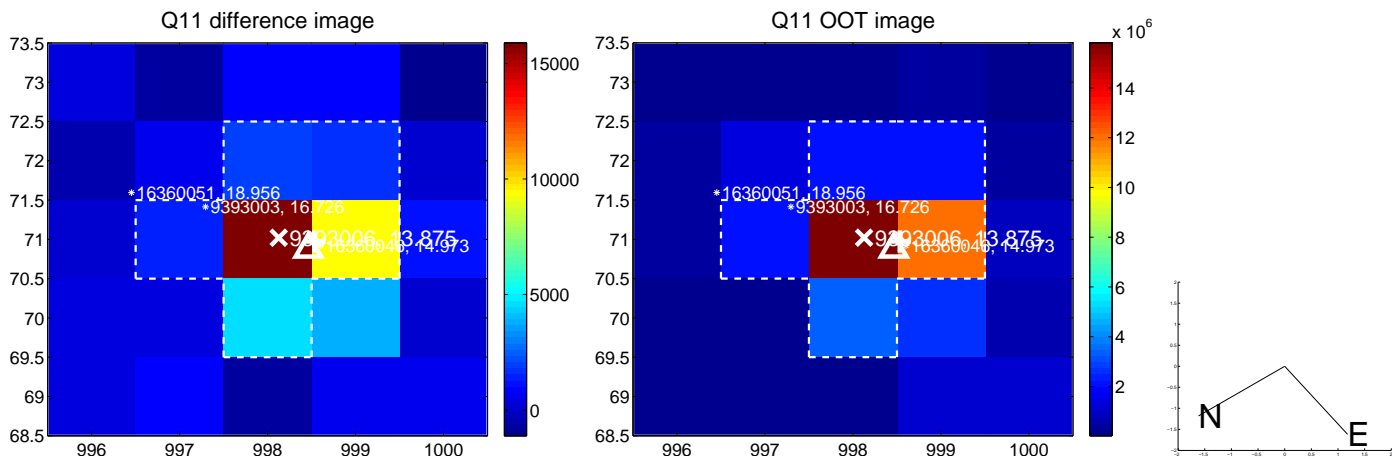
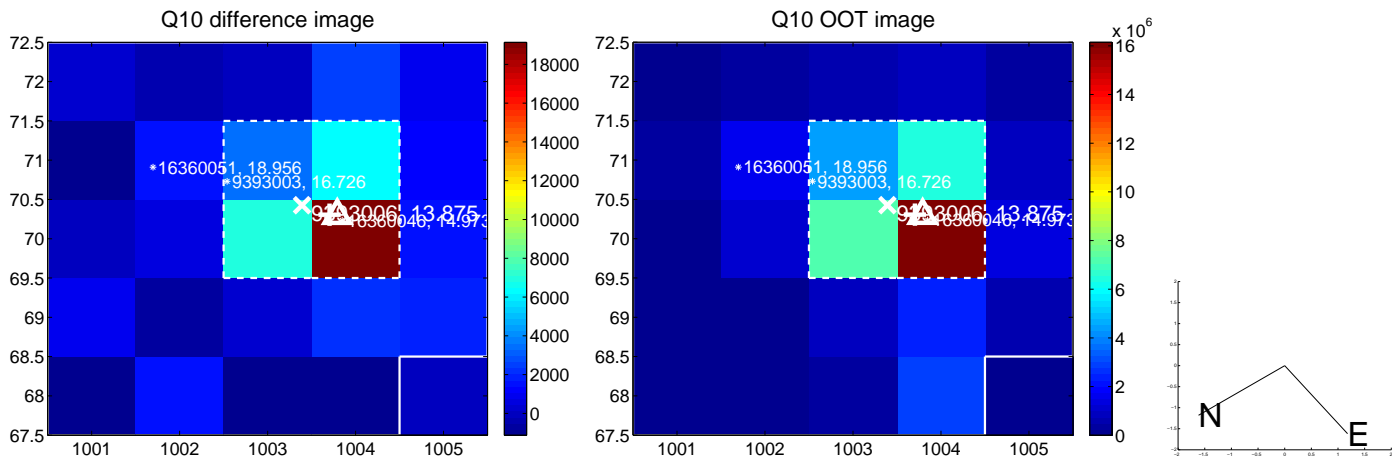
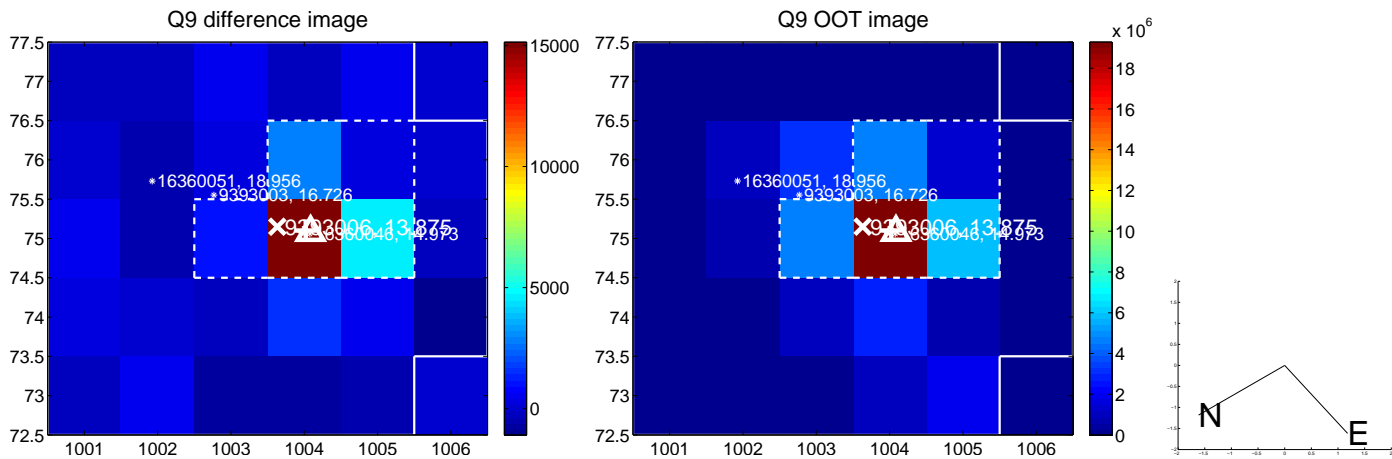
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



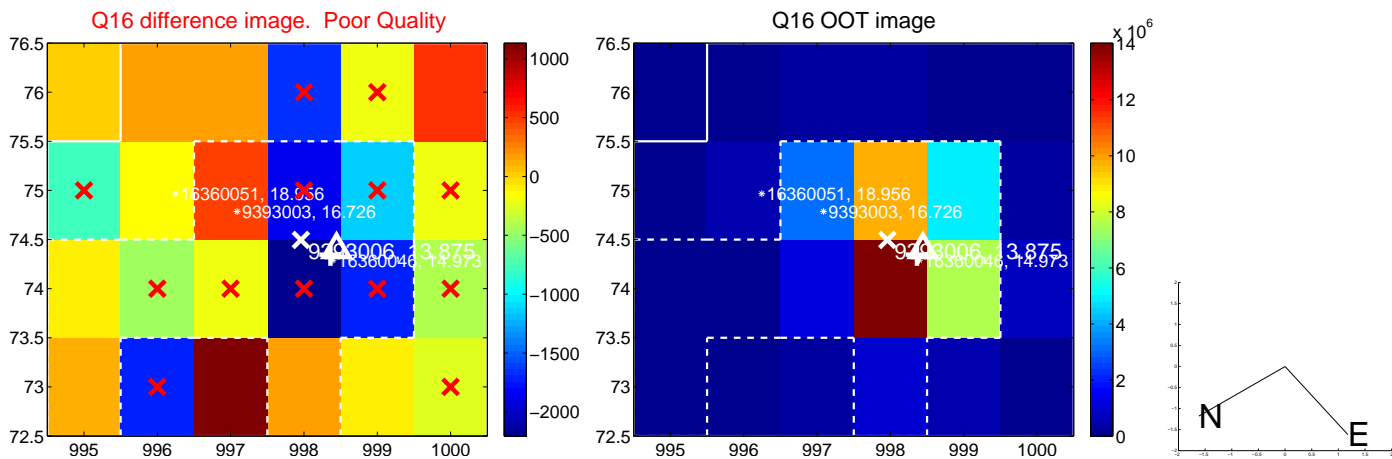
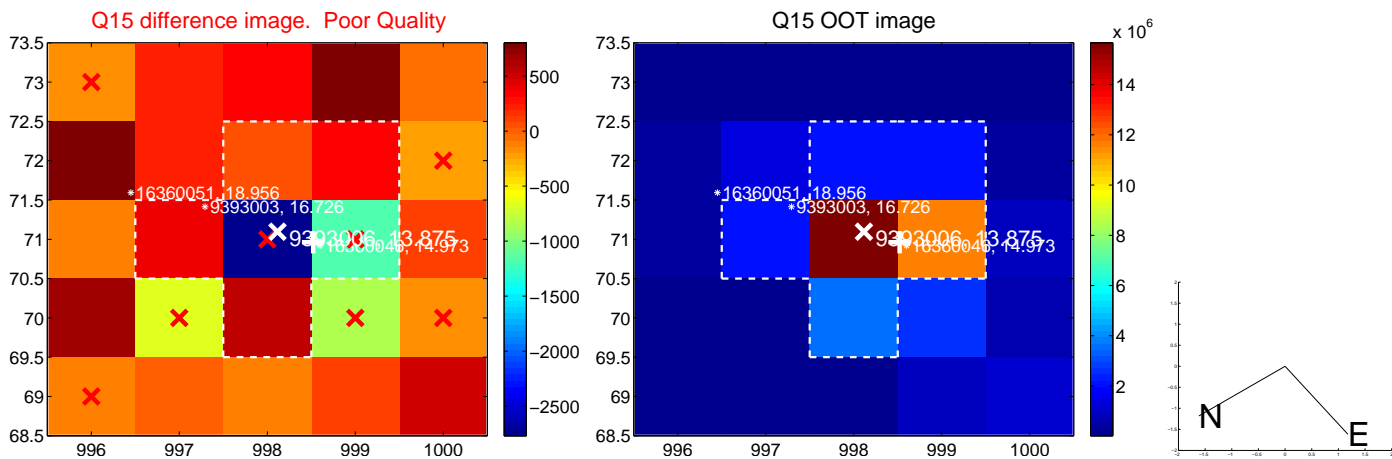
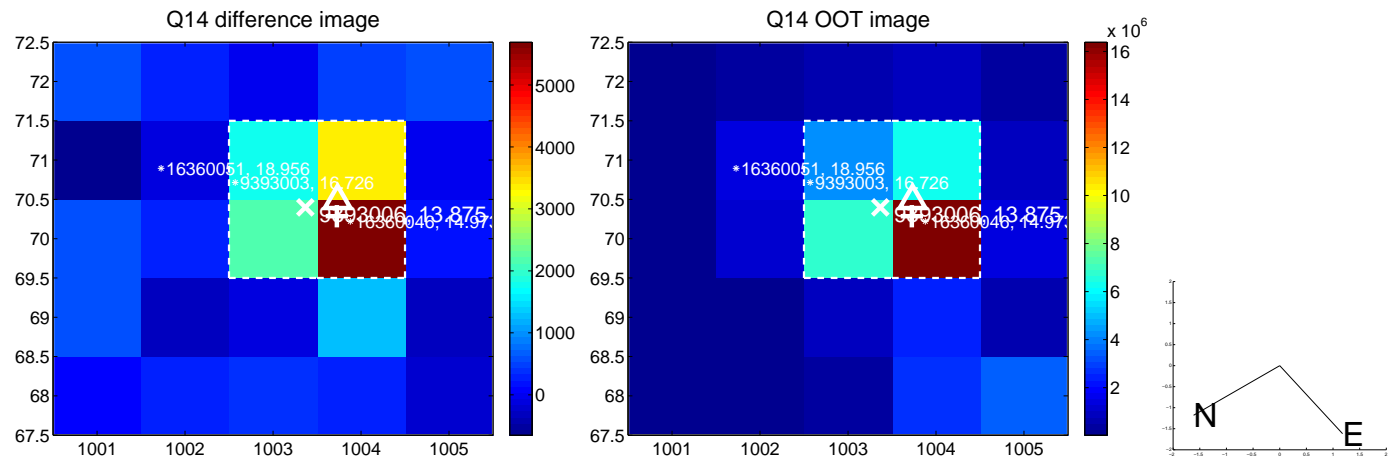
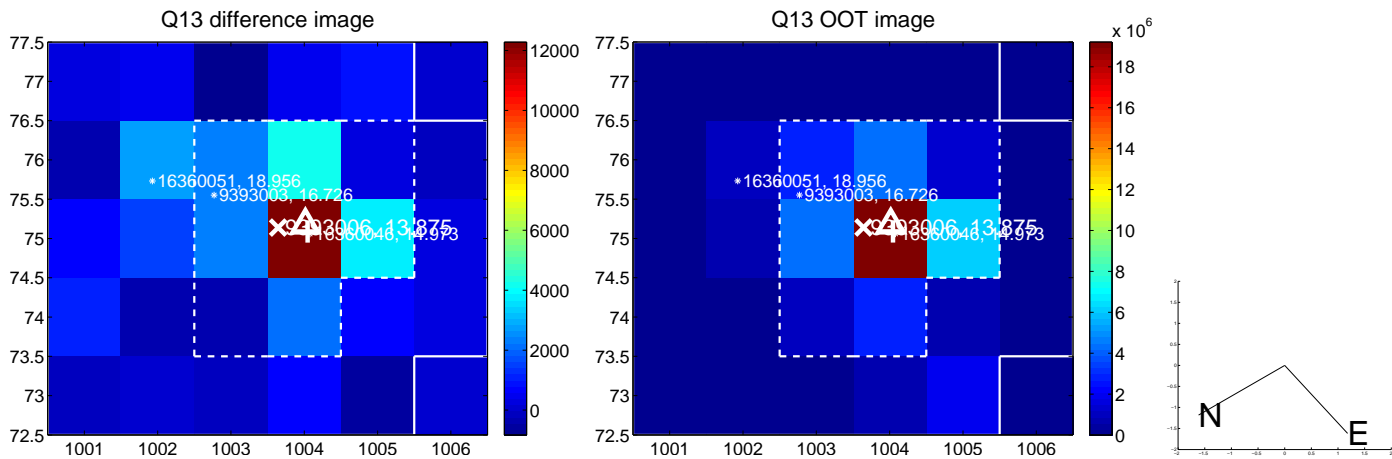
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



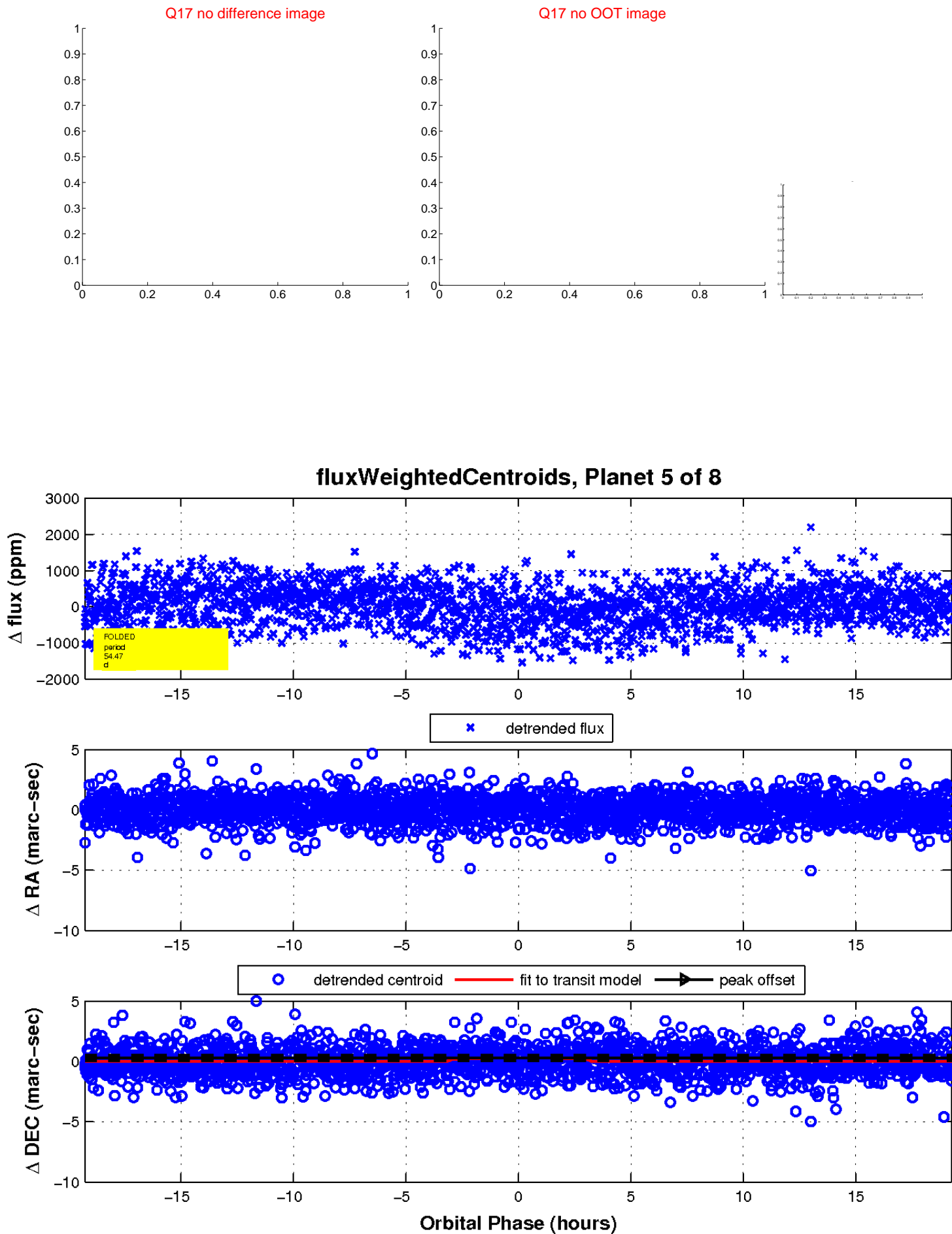
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

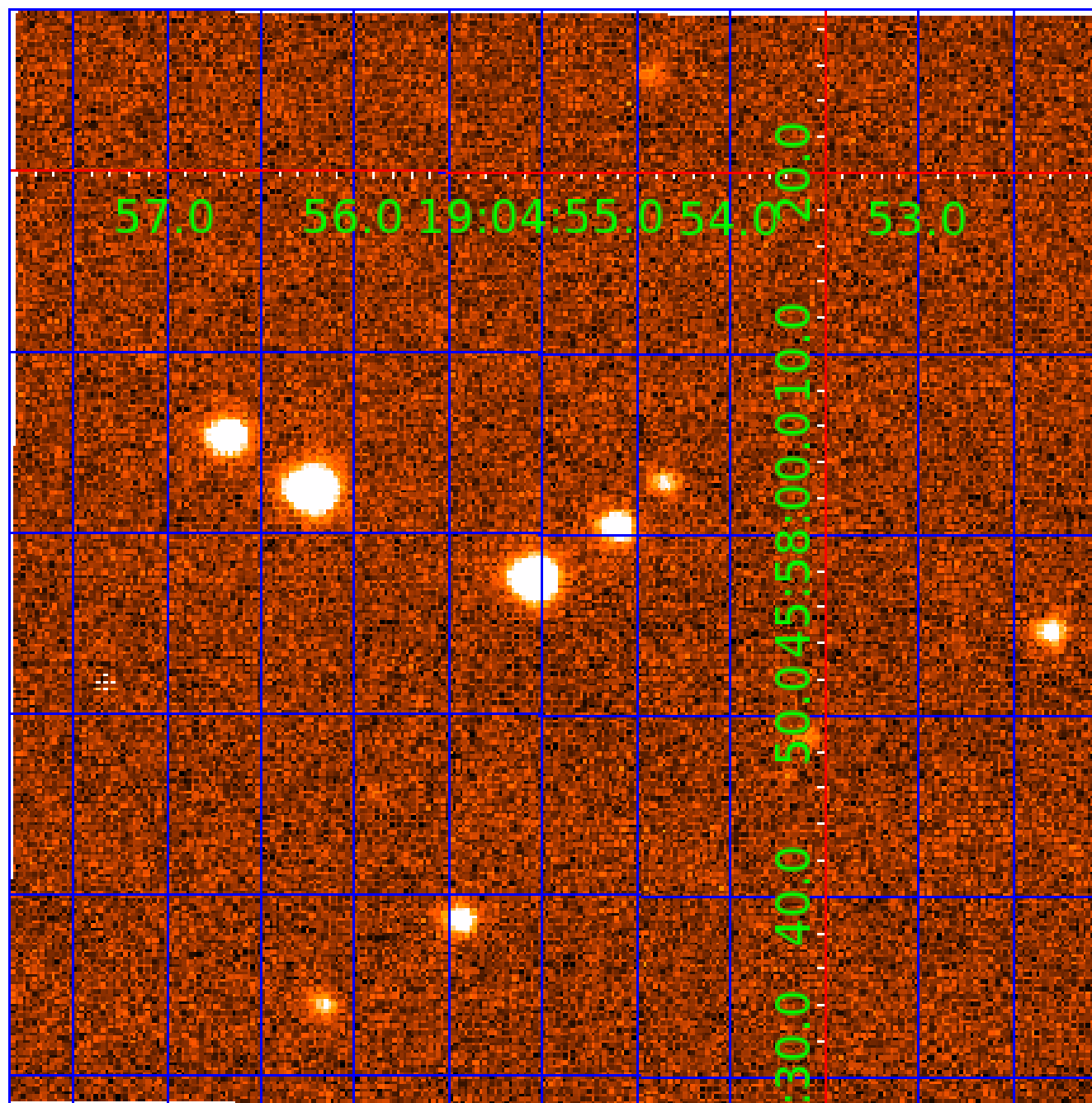


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009393006

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009393006-01	OBS	No	1.321269	132.535802	44.6	4.893	7.7	7.4	1.00	5780	0.66	1800.05
009393006-02	OBS	No	3.487834	132.373899	207.6	13.803	8.5	10.6	1.00	5780	2.11	493.40
009393006-03	OBS	No	149.630074	187.157870	802.9	14.505	15.1	6.8	1.00	5780	3.83	3.29
009393006-05	OBS	No	54.467839	132.774777	456.6	6.422	9.2	7.6	1.00	5780	2.23	12.64
009393006-06	OBS	No	78.059390	201.477510	632.6	5.368	9.7	8.0	1.00	5780	2.61	7.82
009393006-07	OBS	No	21.026194	140.546359	258.2	11.345	8.2	6.7	1.00	5780	1.74	44.97

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009393006-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_KIC_POS
009393006-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

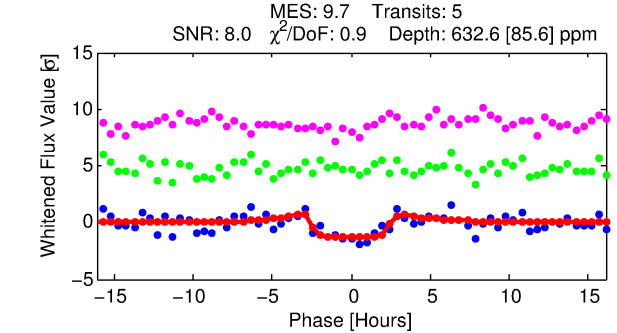
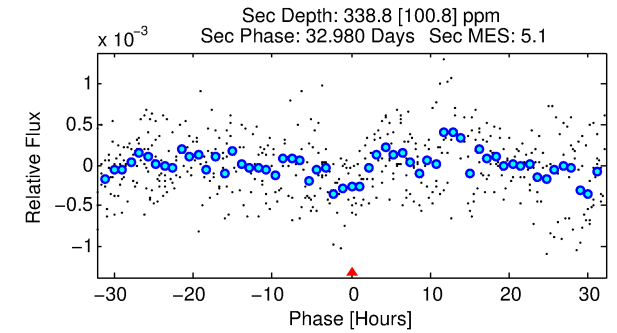
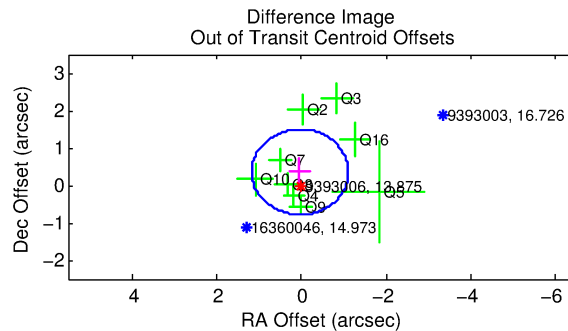
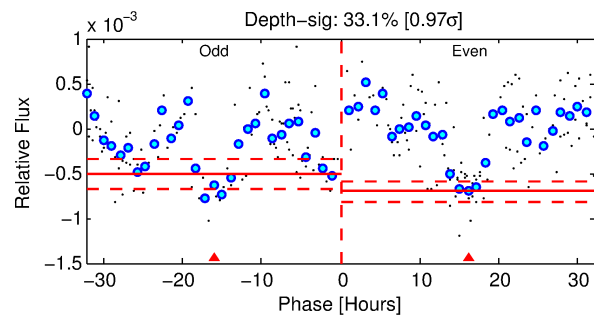
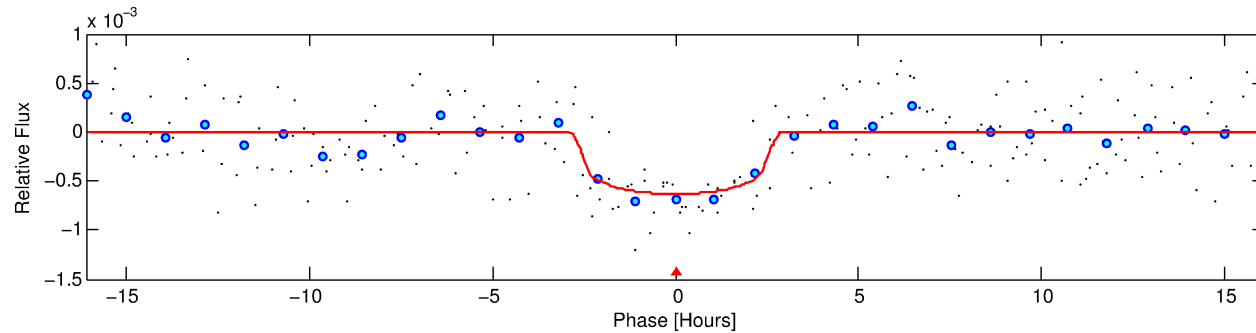
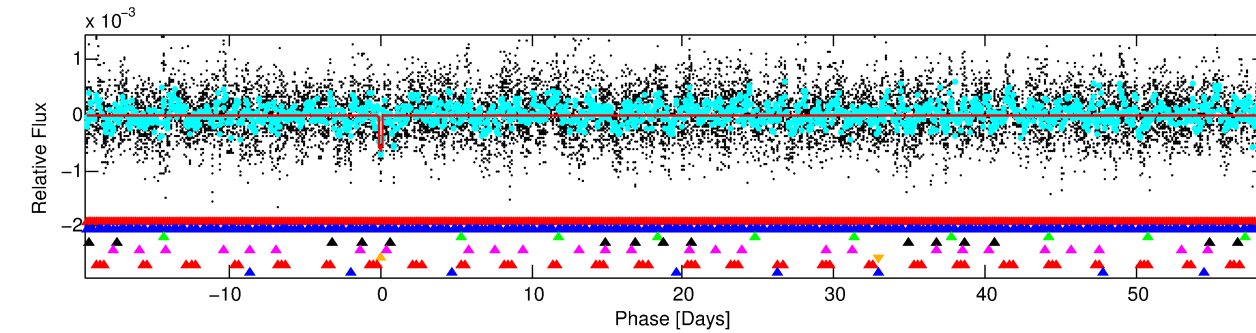
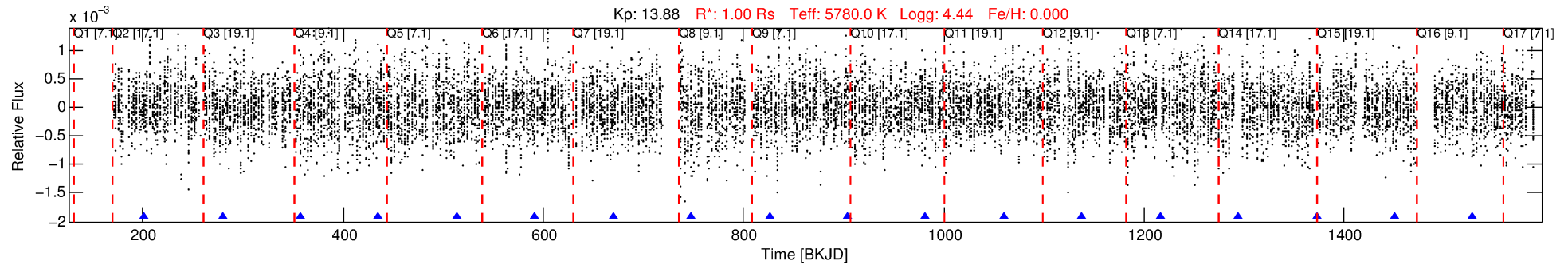
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009393006-06

No Significant Match Found

DV One-Page Summary

KIC: 9393006 Candidate: 6 of 8 Period: 78.059 d



DV Fit Results:

Period = 78.05939 [0.00103] d
Epoch = 201.4775 [0.0097] BKJD
 R_p/R^* = 0.0239 [0.0390]
 a/R^* = 93.72 [668.43]
 b = 0.58 [8.23]
 S_{eff} = 7.82 [0.00]
 T_{eq} = 426 [0] K
 R_p = 2.61 [4.26] R_e
 a = 0.3575 [0.0000] AU
 A_g = 3507.39 [11509.93] [0.30 σ]
 T_{eff} = 5074 [4163] K [1.12 σ]

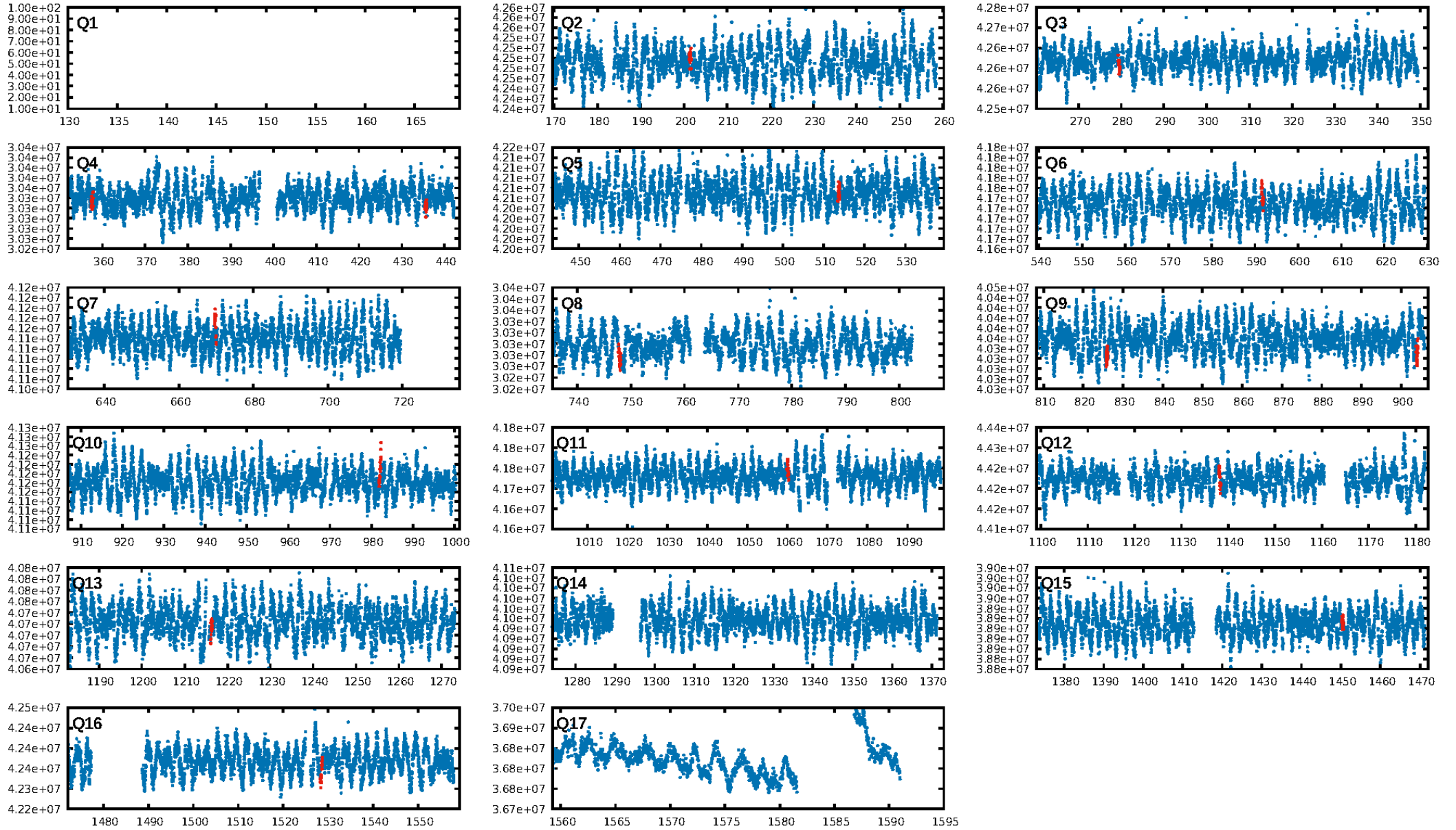
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [67.65 σ]
LongPeriod-sig: 100.0% [59.14 σ]
ModelChiSquare2-sig: 38.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.58e-10
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -0.4704
Centroid-sig: N/A
Centroid-so: 1.165 arcsec [2.67 σ]
OotOffset-rm: 0.358 arcsec [0.94 σ]
OotOffset-st: 2/2/3/2 [9]
KicOffset-rm: 1.399 arcsec [4.84 σ]
KicOffset-st: 2/2/3/2 [9]
DiffImageQuality-fgm: 0.56 [5/9]
DiffImageOverlap-fno: 0.00 [0/12]

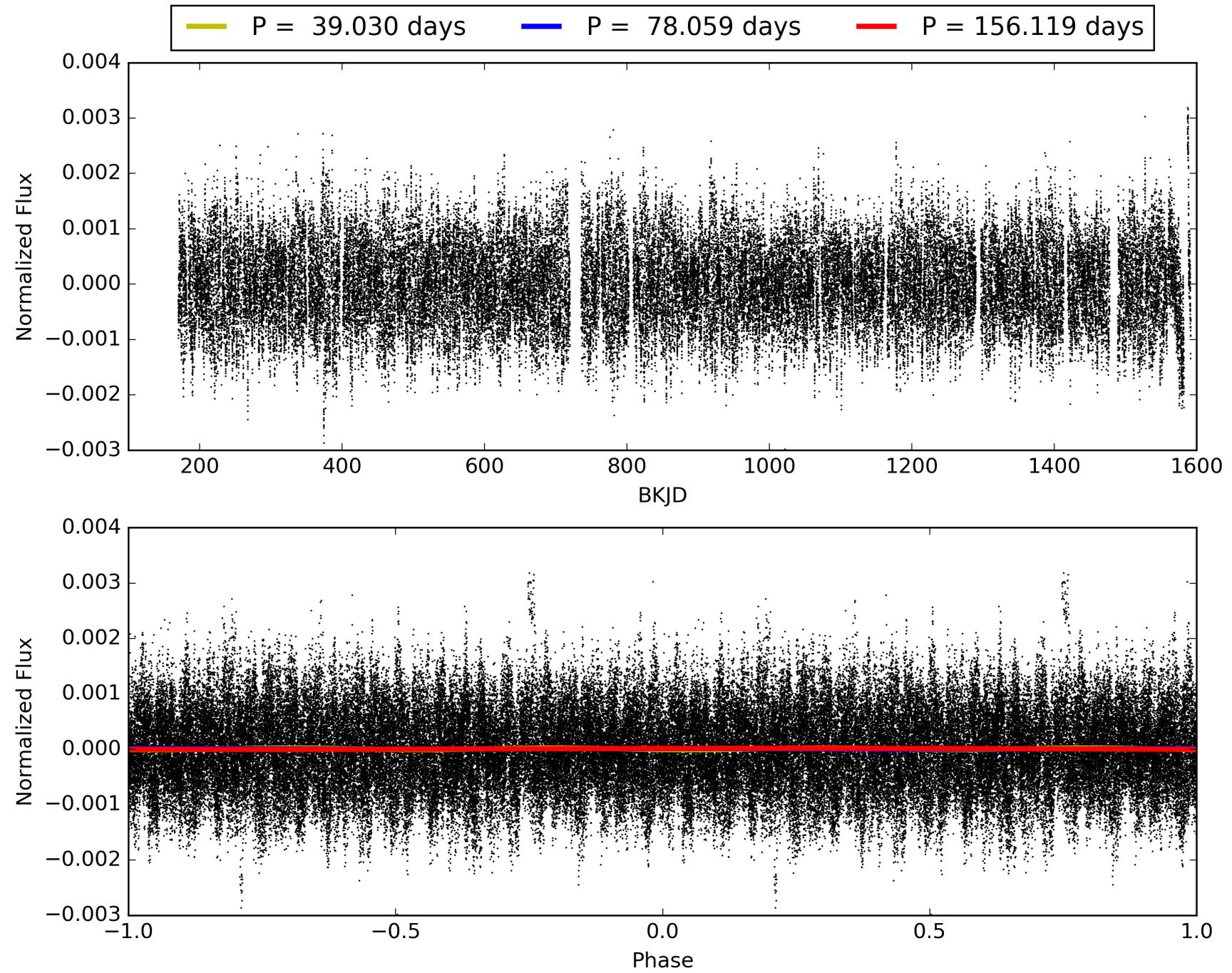
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:52:02 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009393006-06, PDC Light Curves

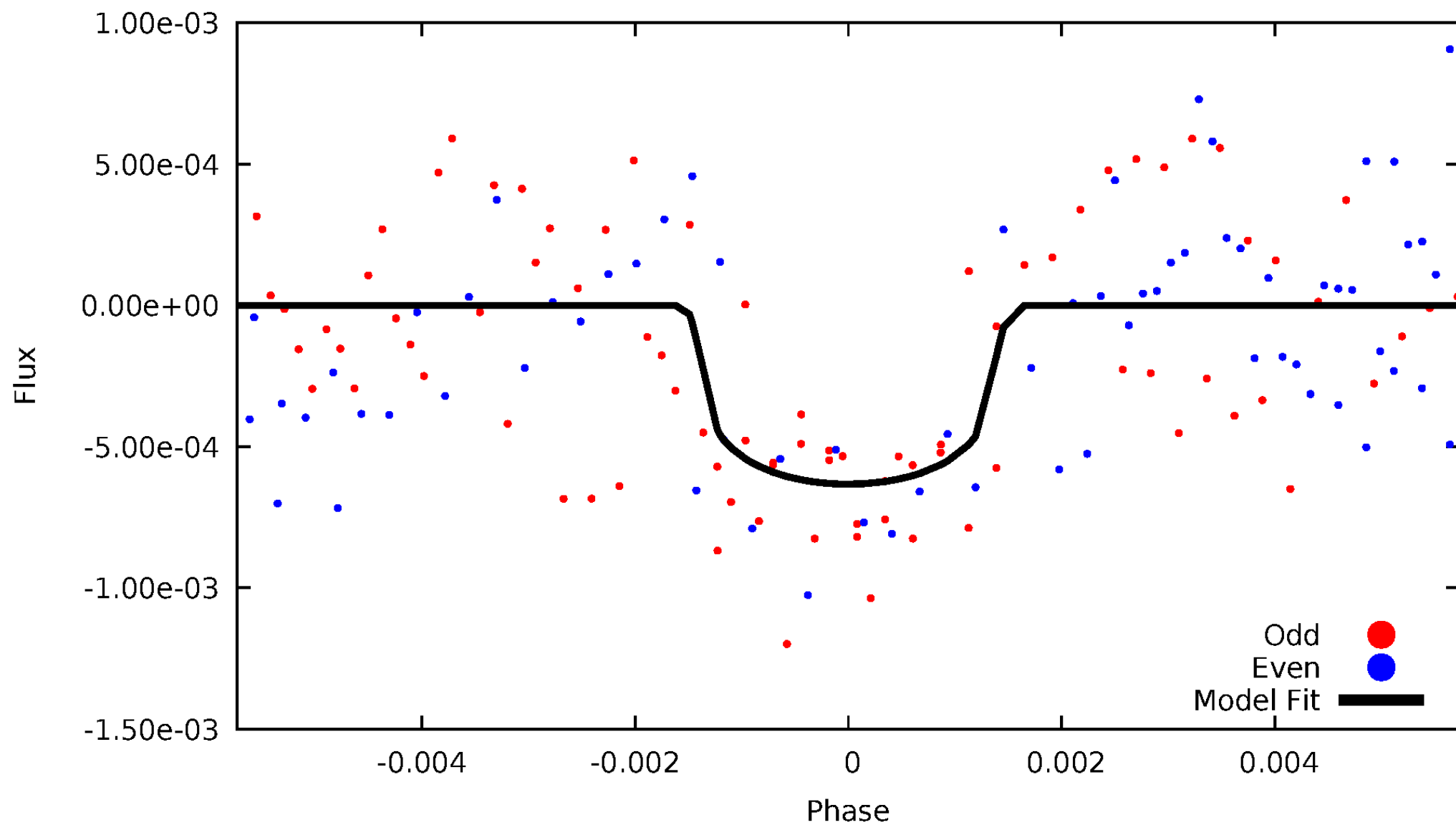


TCE 009393006-06



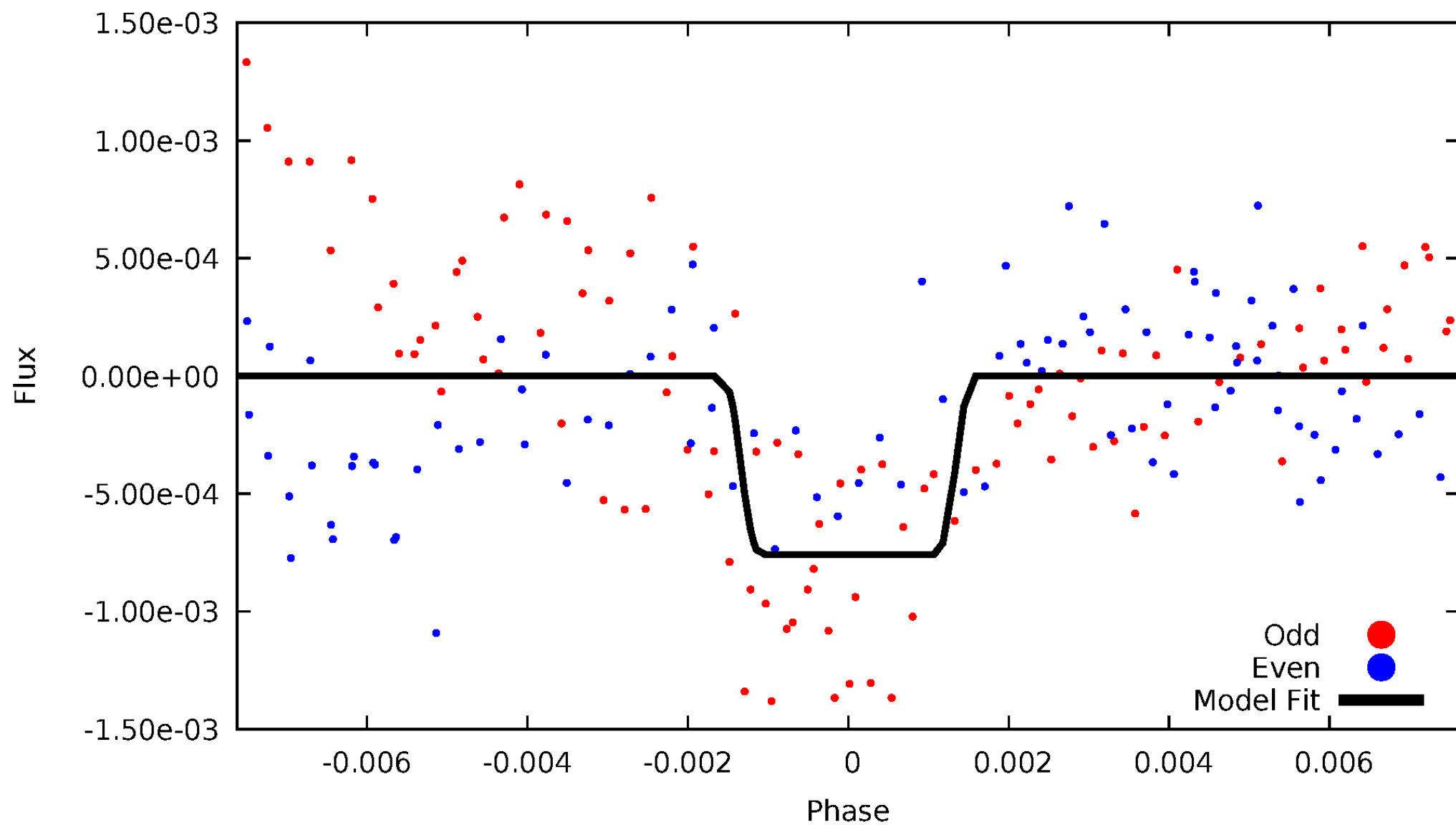
DV Odd/Even

TCE 009393006-06



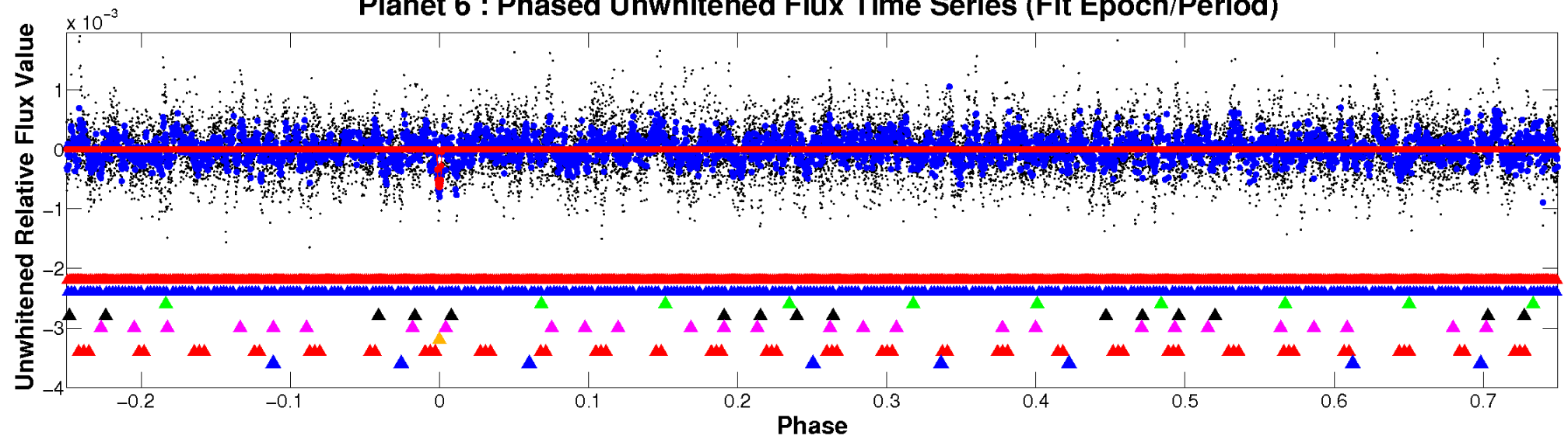
ALT Odd/Even

TCE 009393006-06

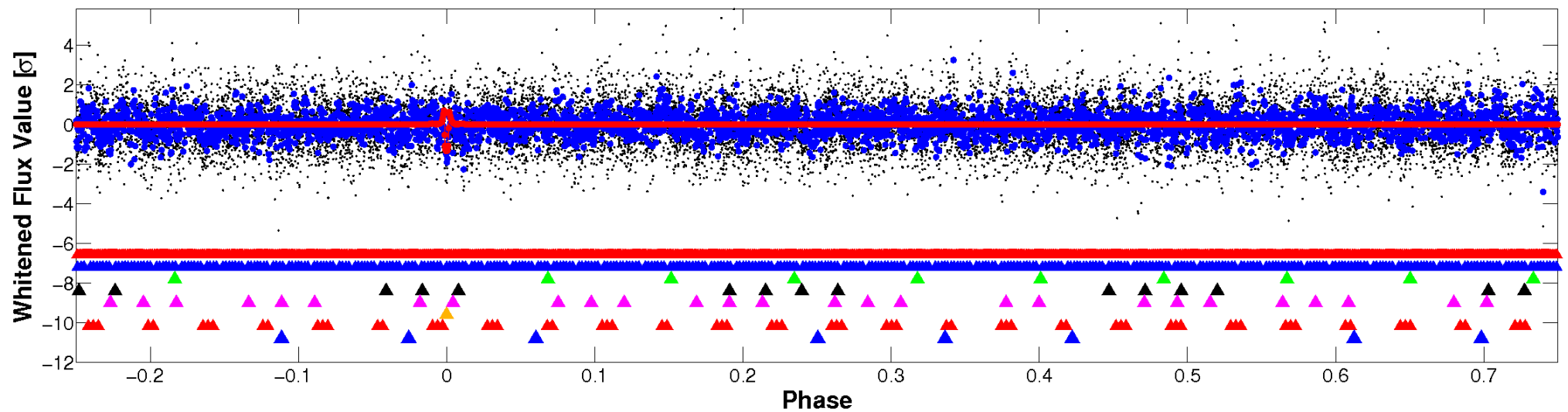


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

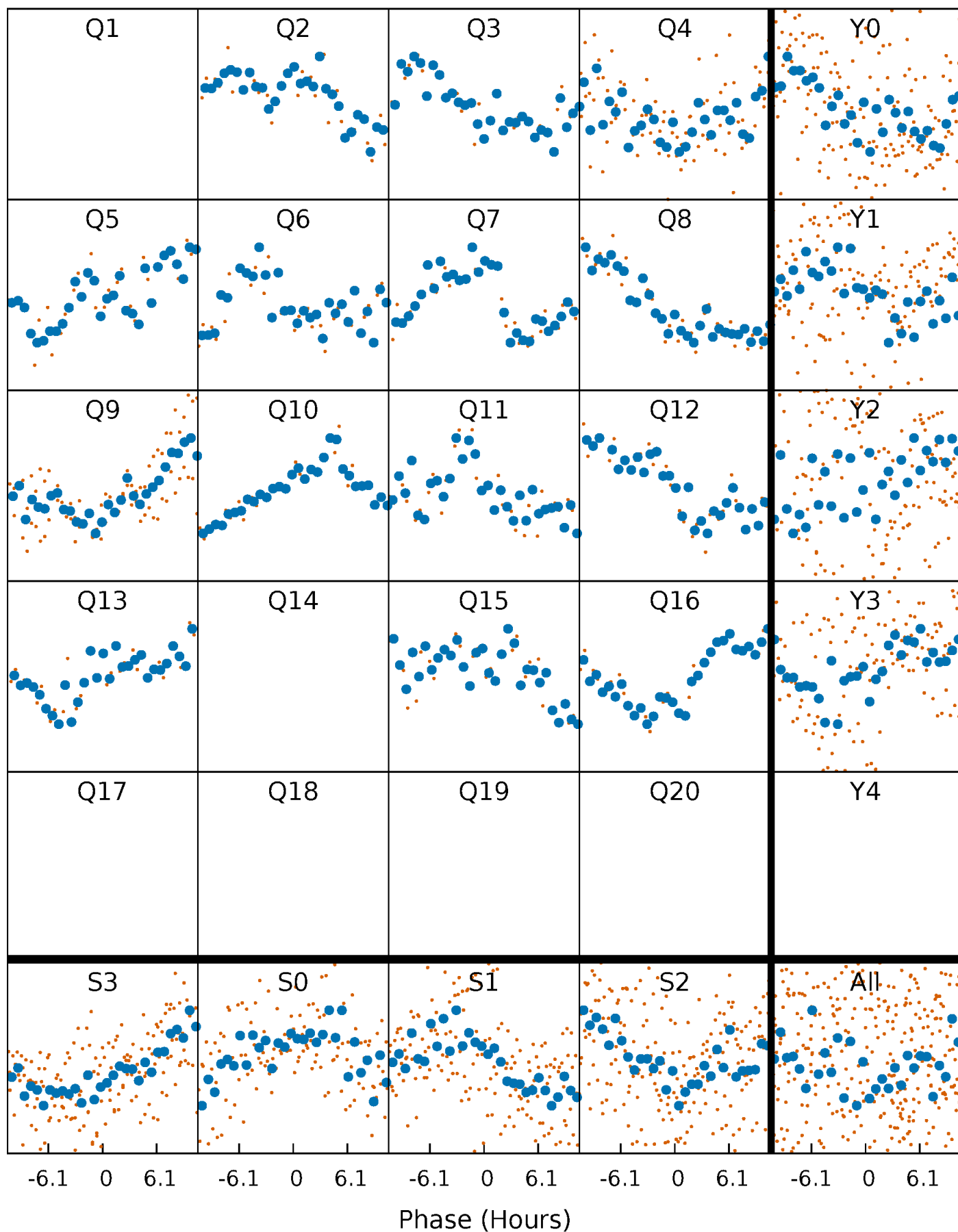


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



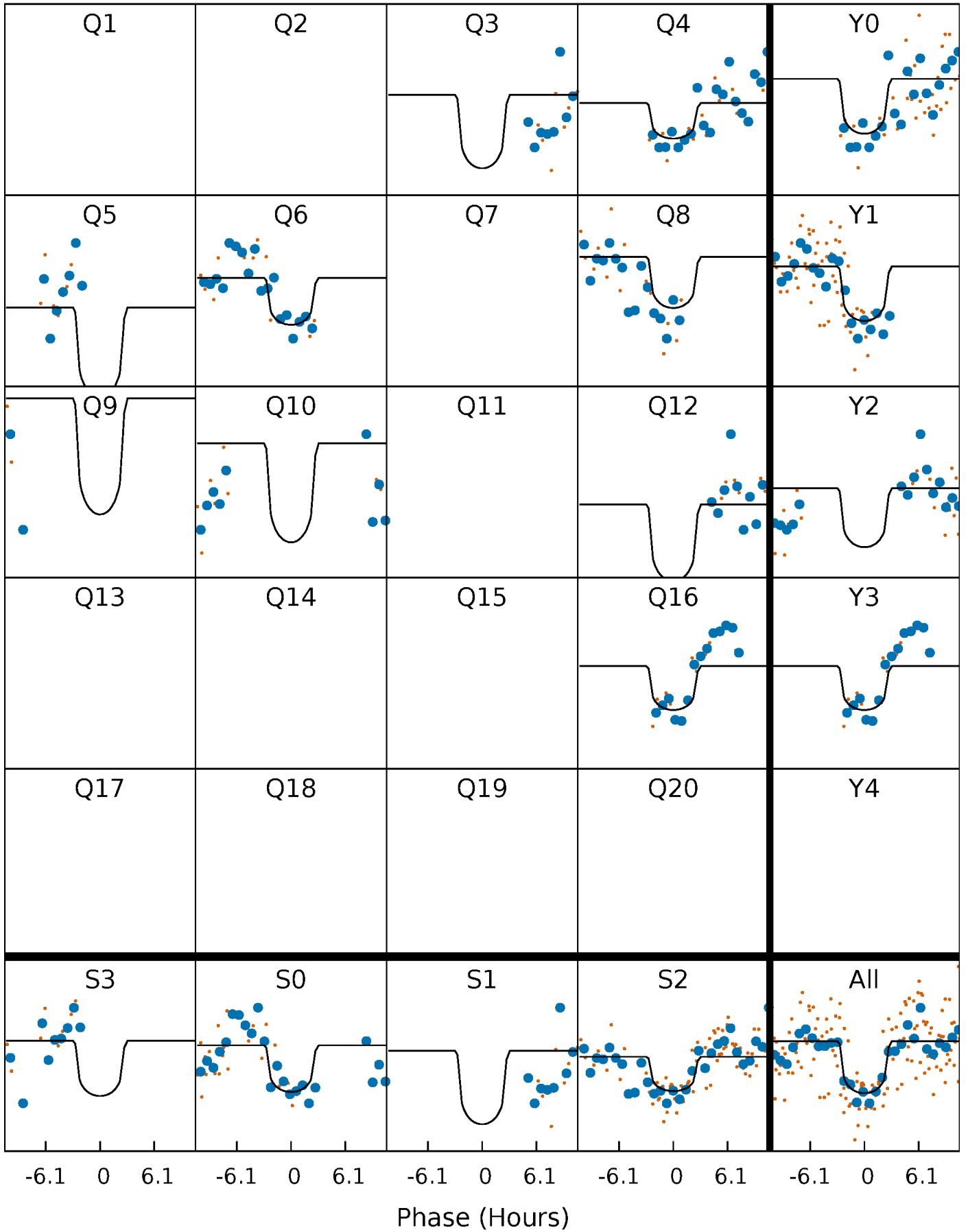
PDC Quarter-Phased Transit Curves

TCE 009393006-06 P= 78.059390 Days $T_0=201.477510$ (BKJD)



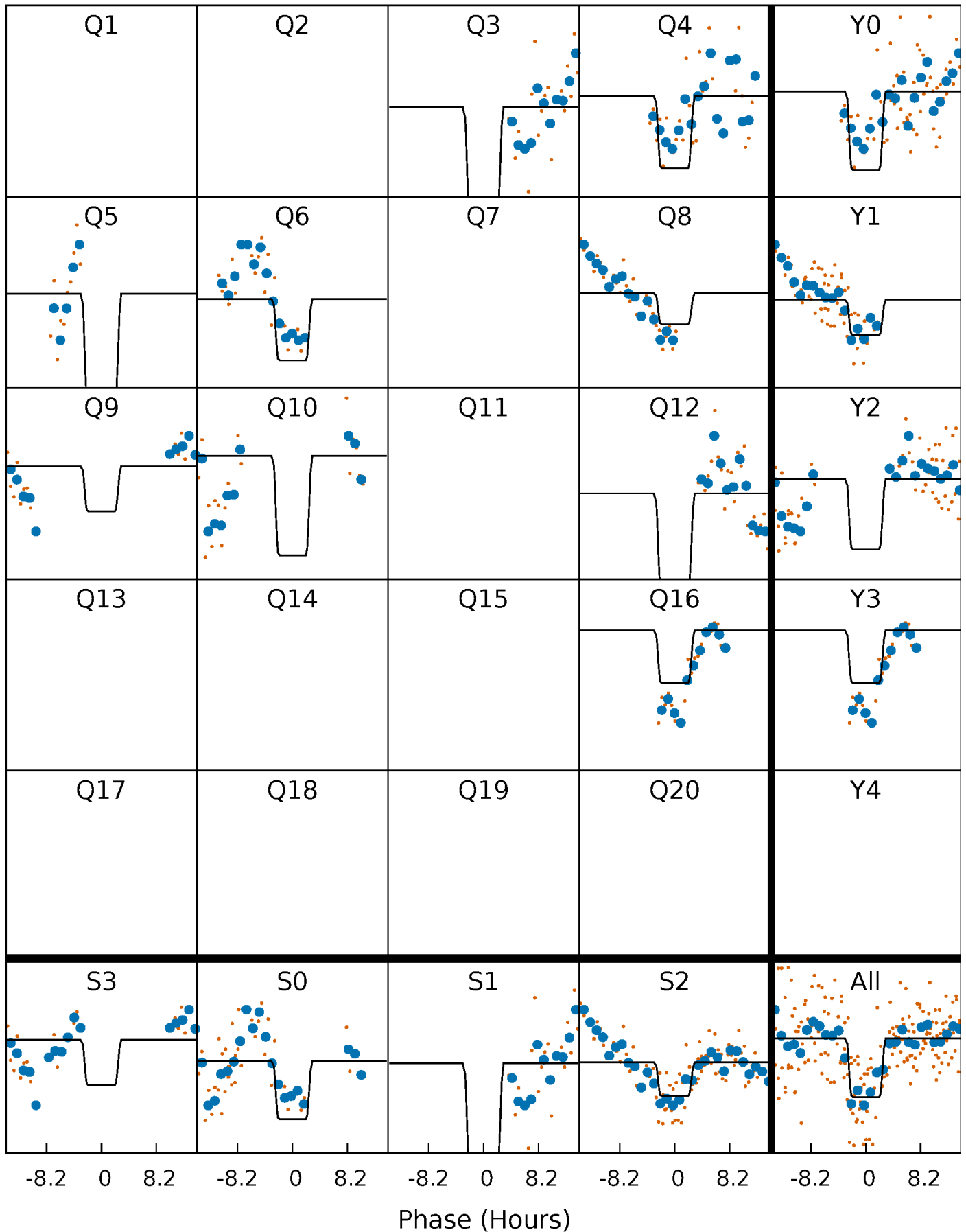
DV Quarter-Phased Transit Curves

TCE 009393006-06 P= 78.059390 Days $T_0=201.477510$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

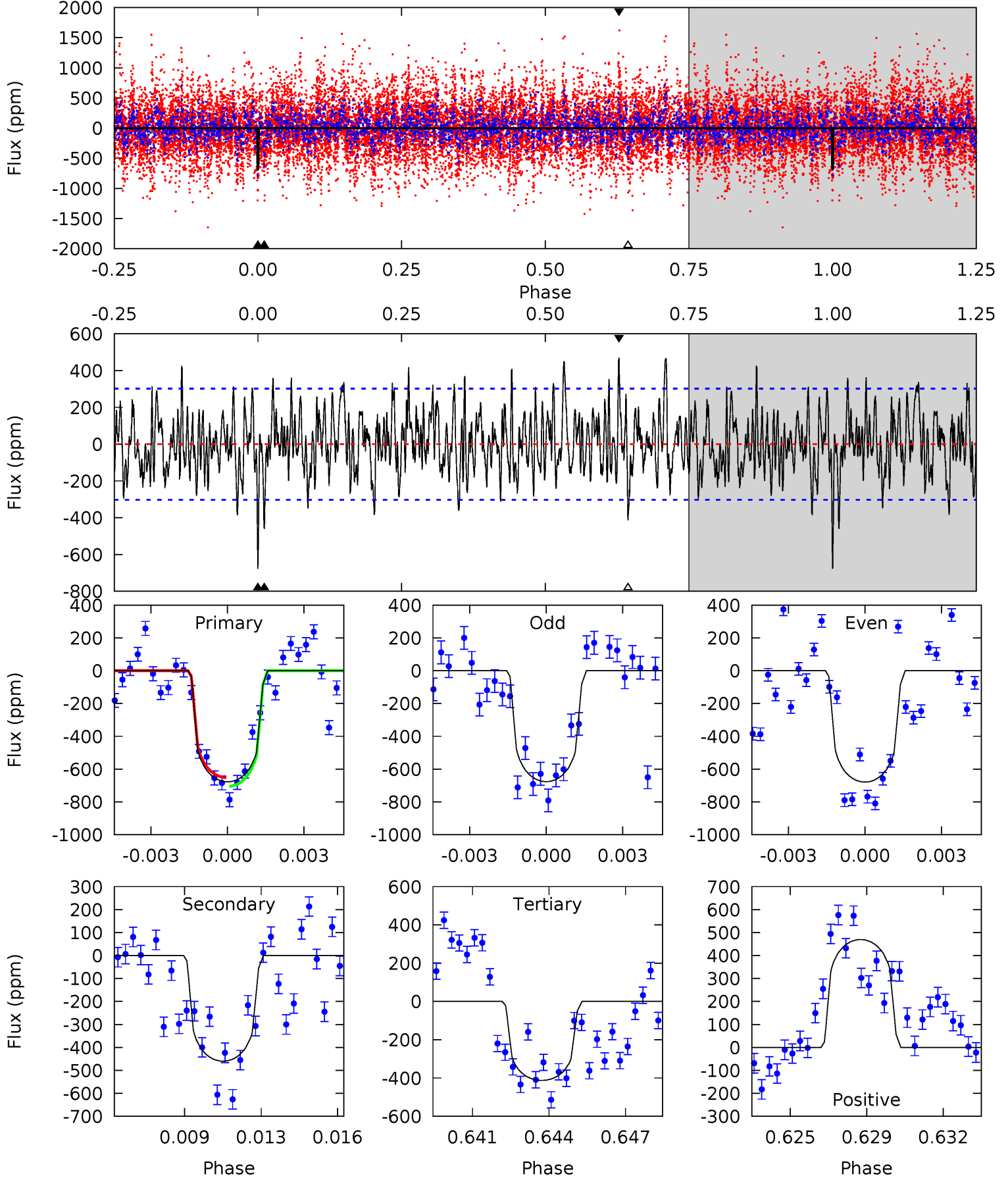
TCE 009393006-06 P= 78.056932 Days $T_0=201.524413$ (BKJD)



DV Model-Shift Uniqueness Test

009393006-06, P = 78.059390 Days, E = 123.418120 Days

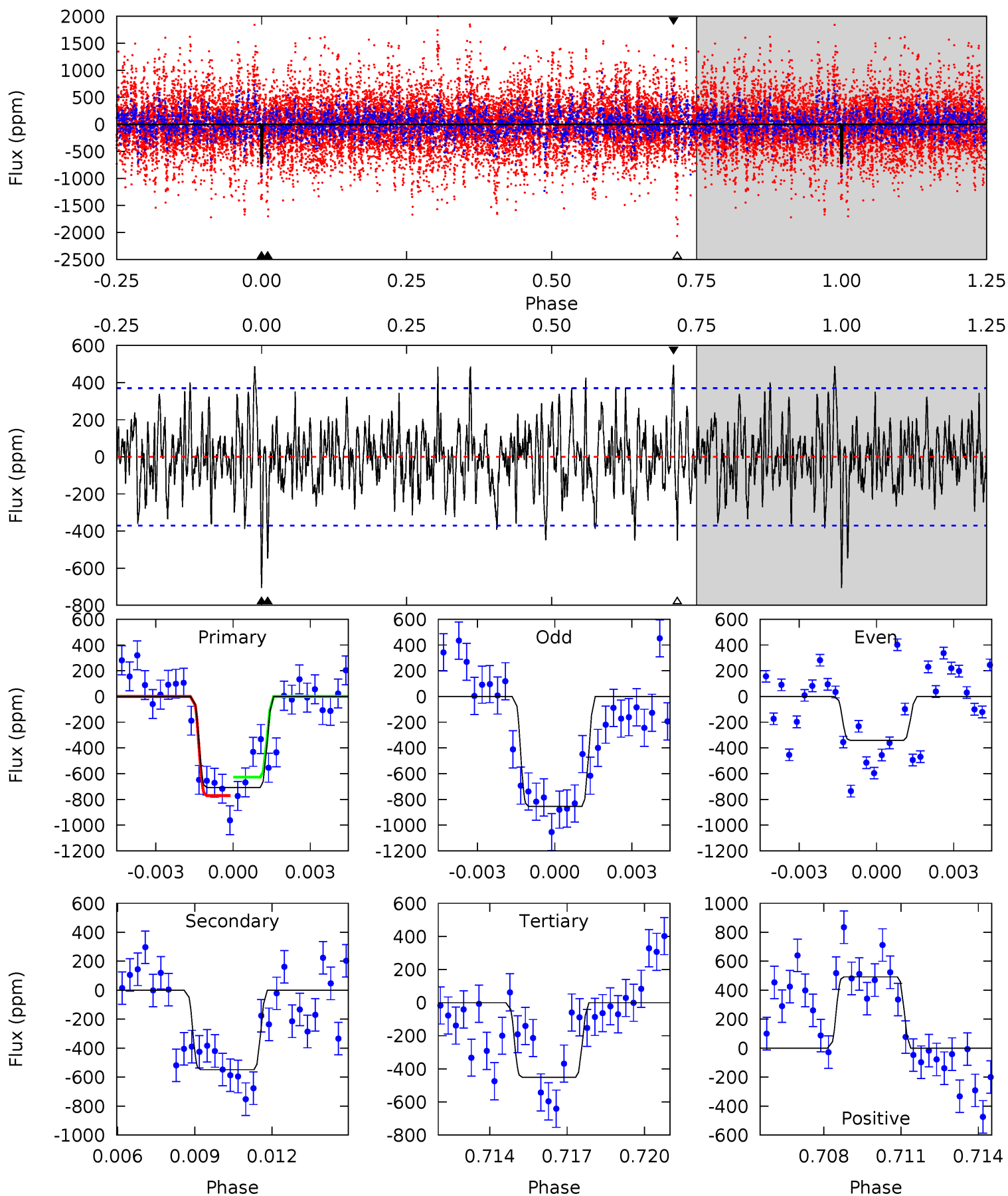
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	7.97	7.15	8.14	5.24	2.95	2.49	4.59	3.60	0.82	-0.17	0.02	0.82	0.41	0.45



Alt Model-Shift Uniqueness Test

009393006-06, P = 78.056932 Days, E = 123.467481 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.0	7.78	6.40	6.98	5.25	2.97	2.06	3.64	3.05	1.38	0.80	3.34	0.98	0.41	1.02



Stellar Parameters For KIC 009393006

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009393006-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-460 ± 58	$3.84^{+3.73}_{-2.47}$	596^{+28}_{-30}	4626^{+3018}_{-978}	2143^{+14863}_{-1575}
Alt.	-548 ± 70	$4.61^{+3.64}_{-2.90}$	595^{+29}_{-27}	4471^{+2679}_{-839}	1771^{+12363}_{-1215}

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming A=0.3)
 A_{obs} = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

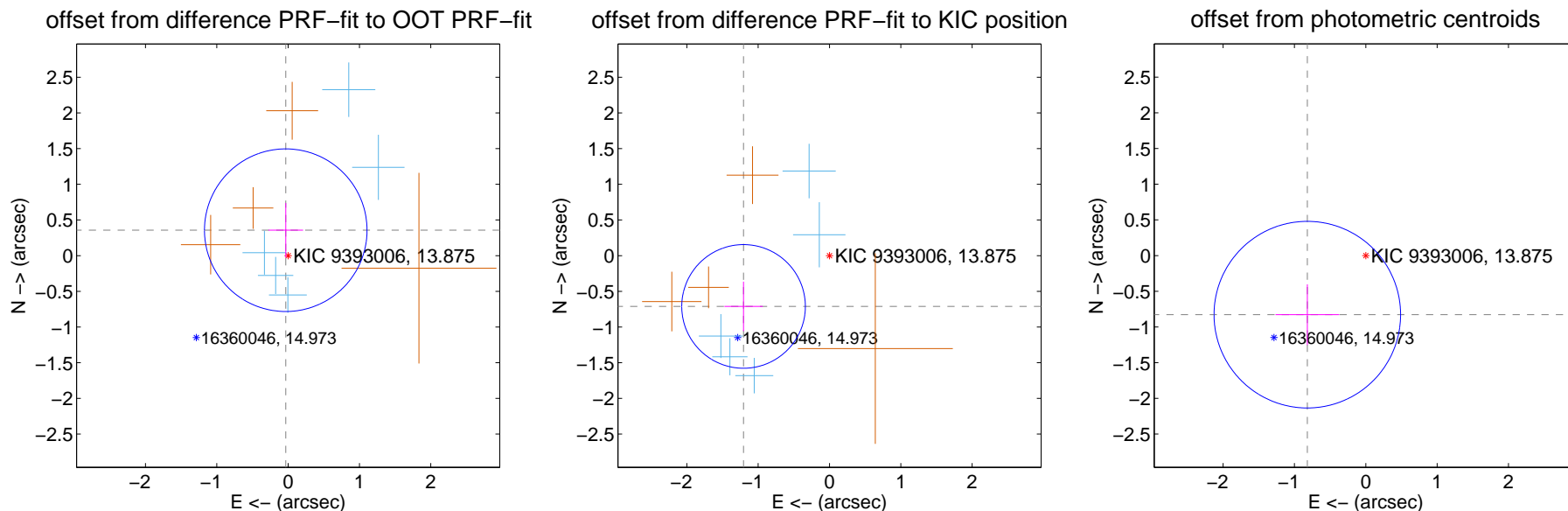
DV Centroid Data

Supplemental centroid analysis for 009393006-06. Kepler magnitude: 13.88. Transit SNR 8.00

There are 5 quarters with good PRF difference image offsets

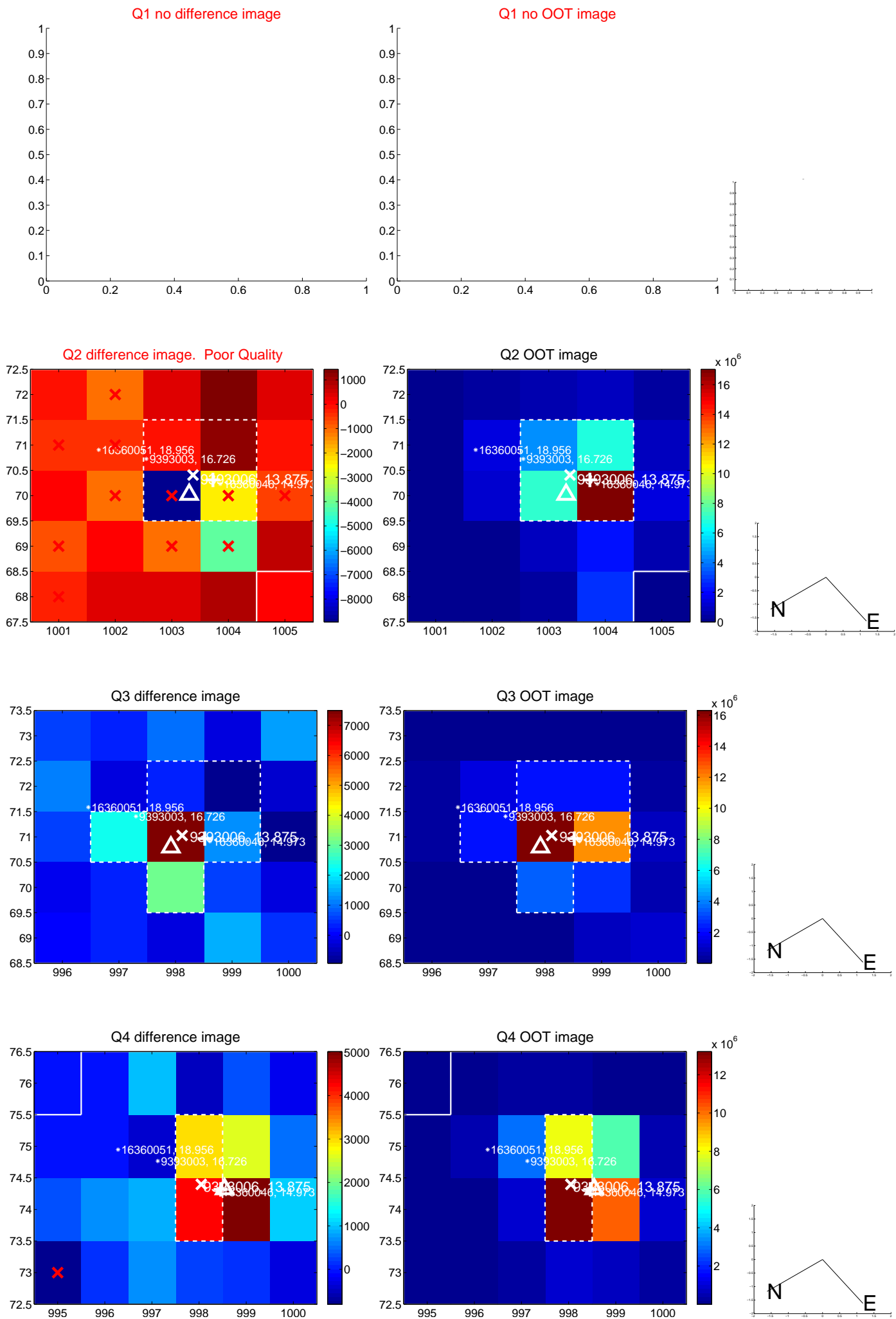
The direct PRF centroid is offset from the target star catalog position by about 1.70 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.358 ± 0.380	0.94	0.033 ± 0.243	0.357 ± 0.381
PRF-fit source offset from KIC position	1.399 ± 0.289	4.84	1.205 ± 0.269	-0.712 ± 0.347
photometric centroid source offset	1.17 ± 0.44	2.67	0.82 ± 0.45	-0.83 ± 0.43

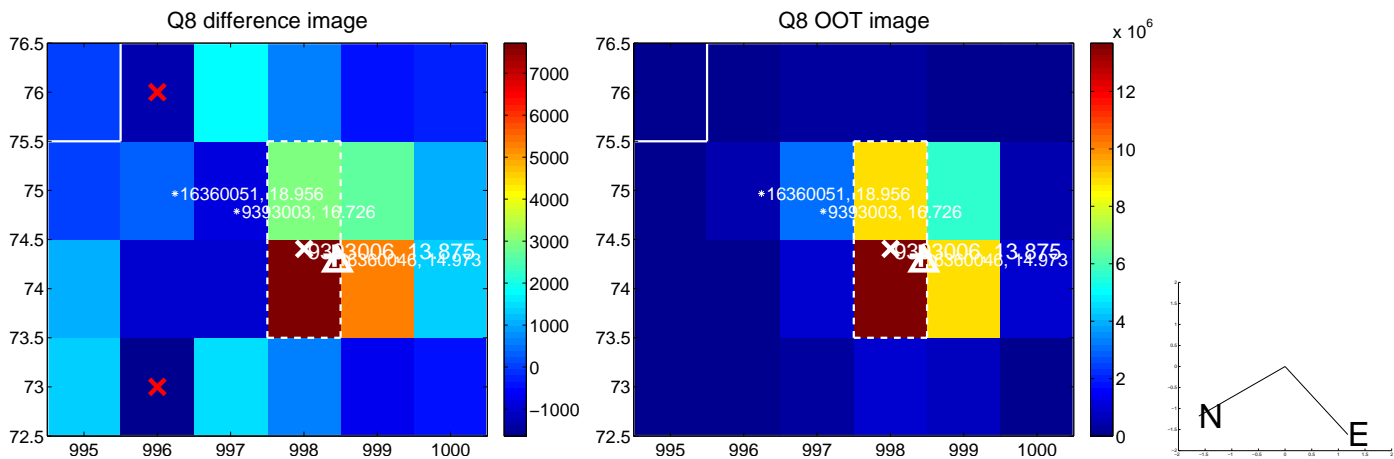
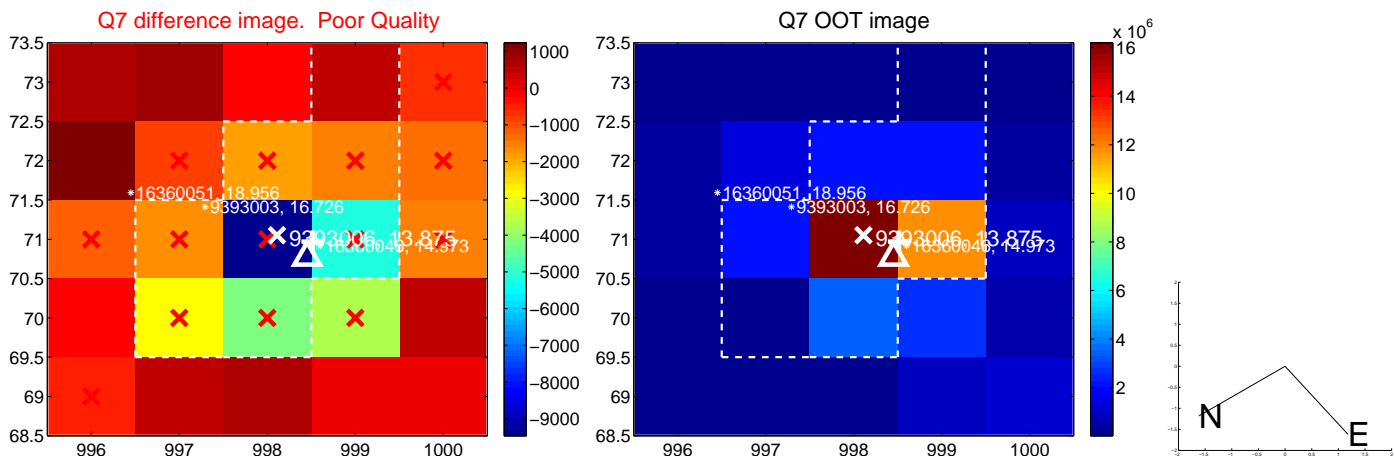
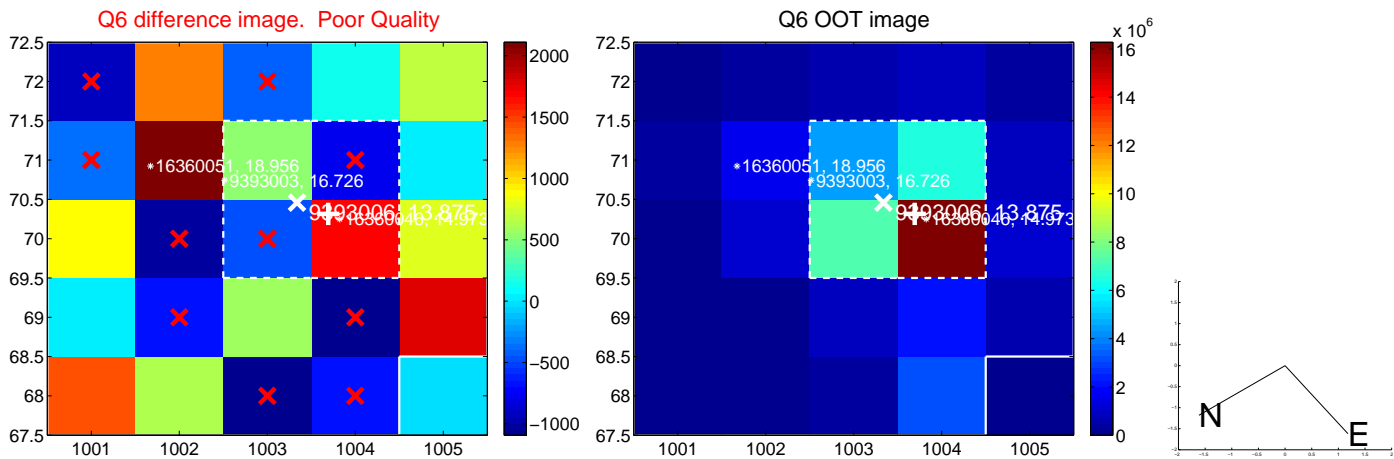
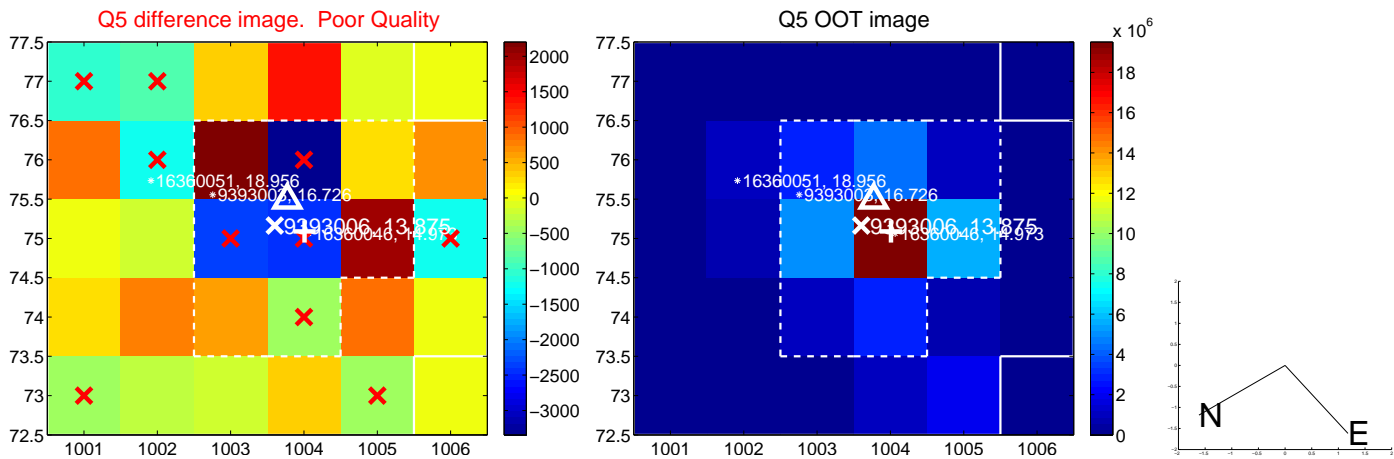


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

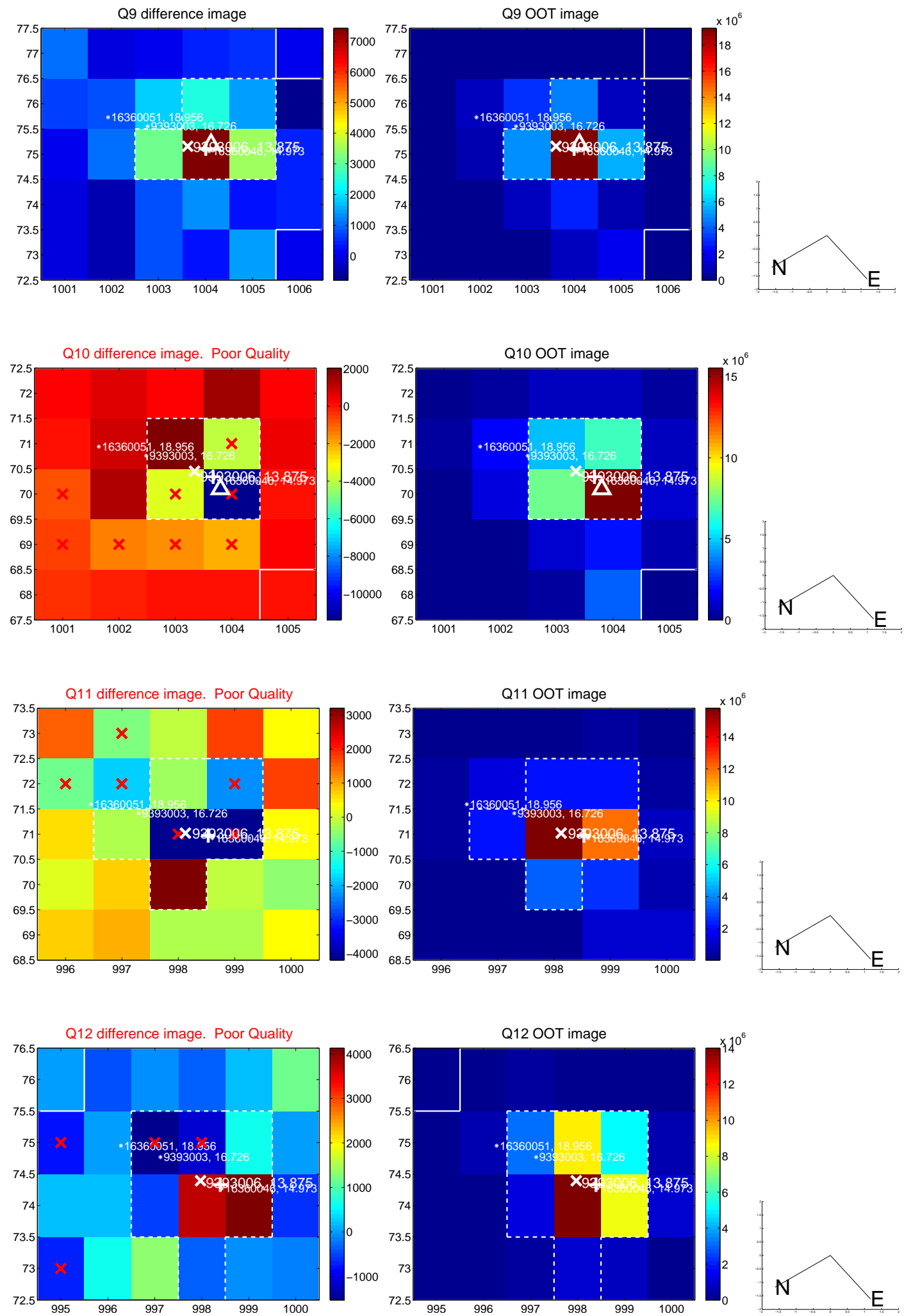
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

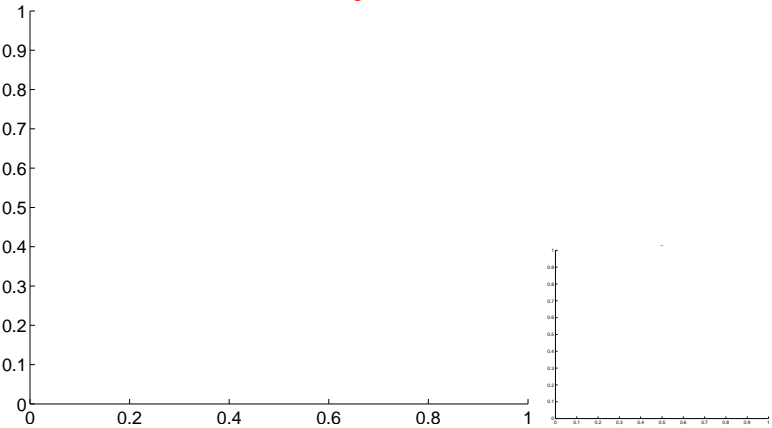


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

Q13 no difference image



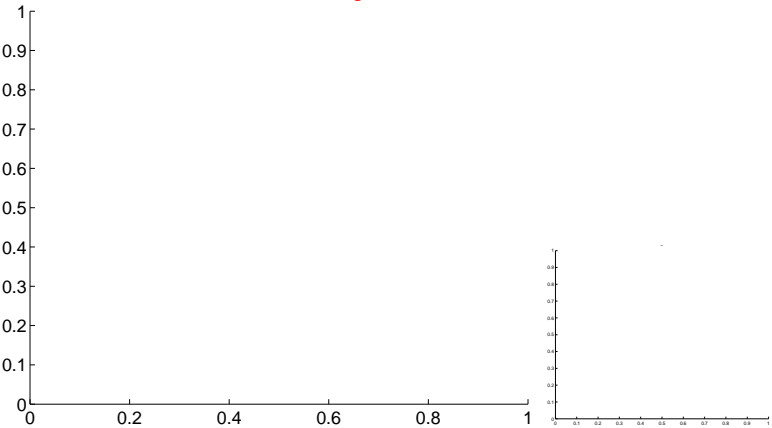
Q13 no OOT image



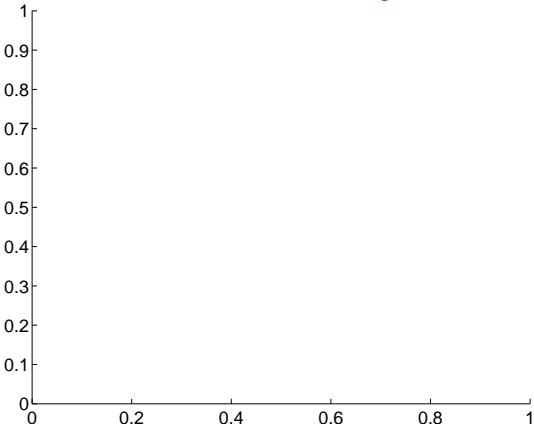
Q14 no difference image



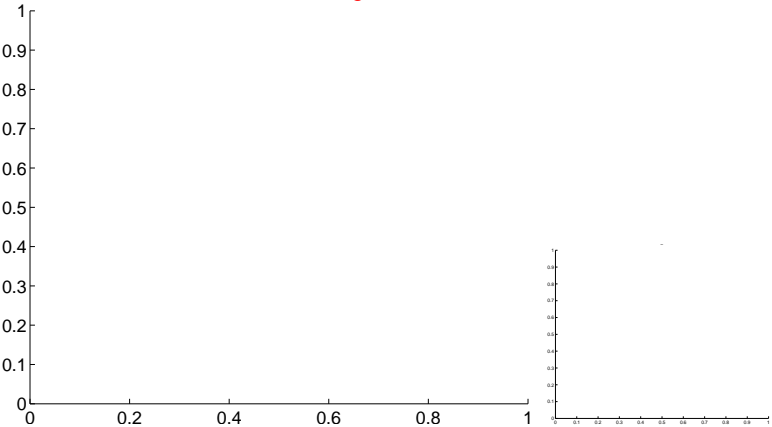
Q14 no OOT image



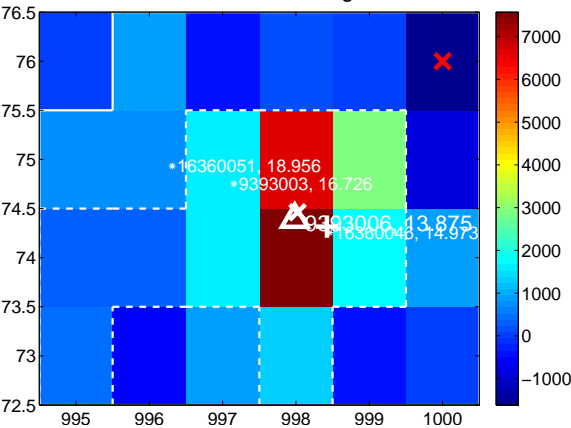
Q15 no difference image



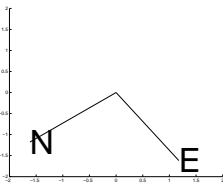
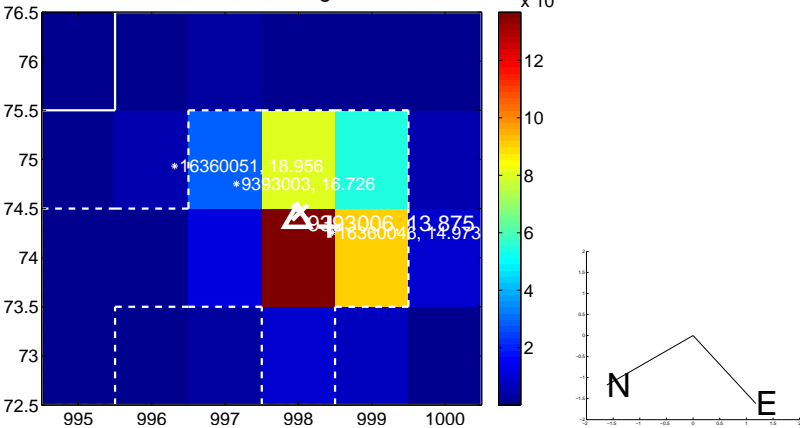
Q15 no OOT image



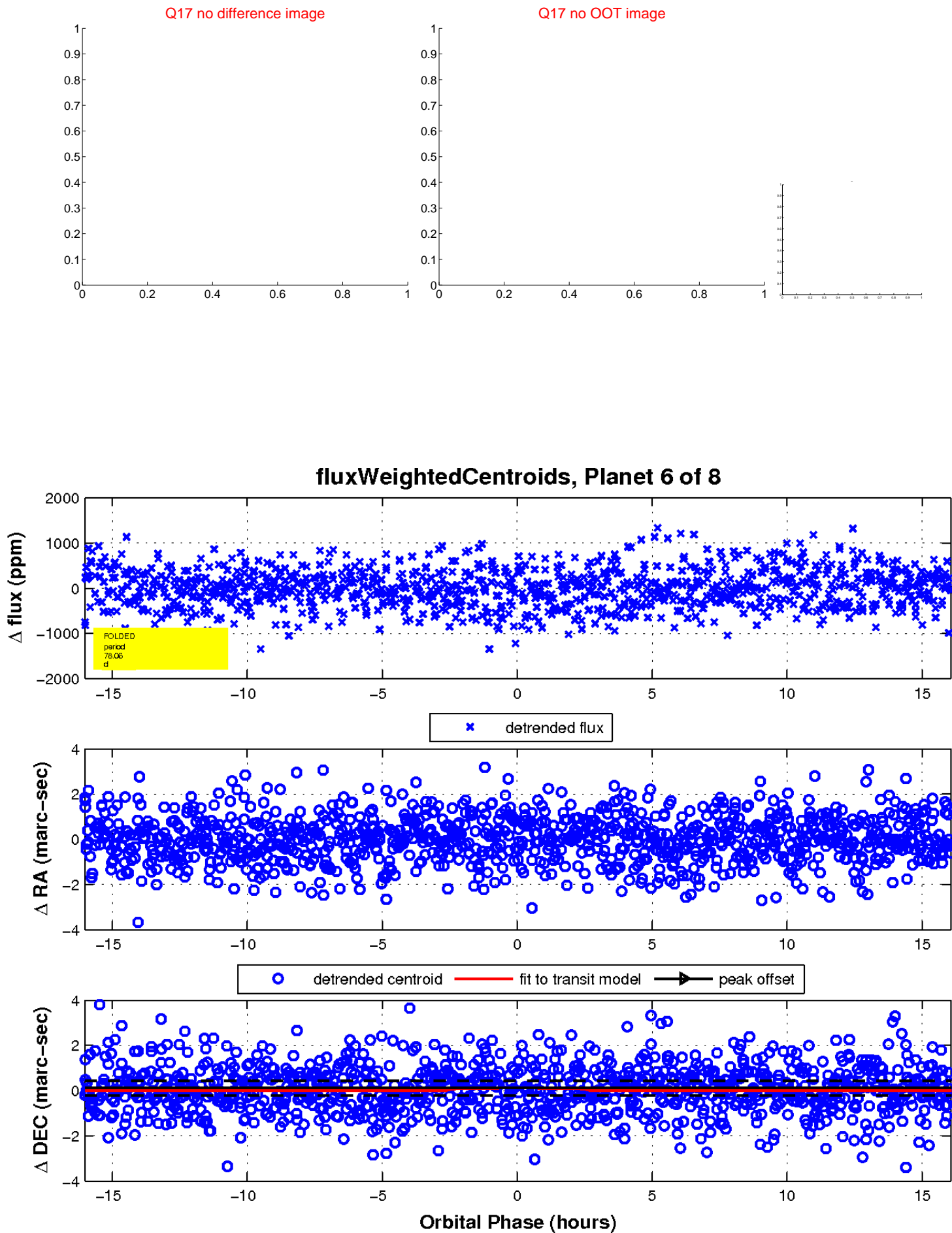
Q16 difference image



Q16 OOT image

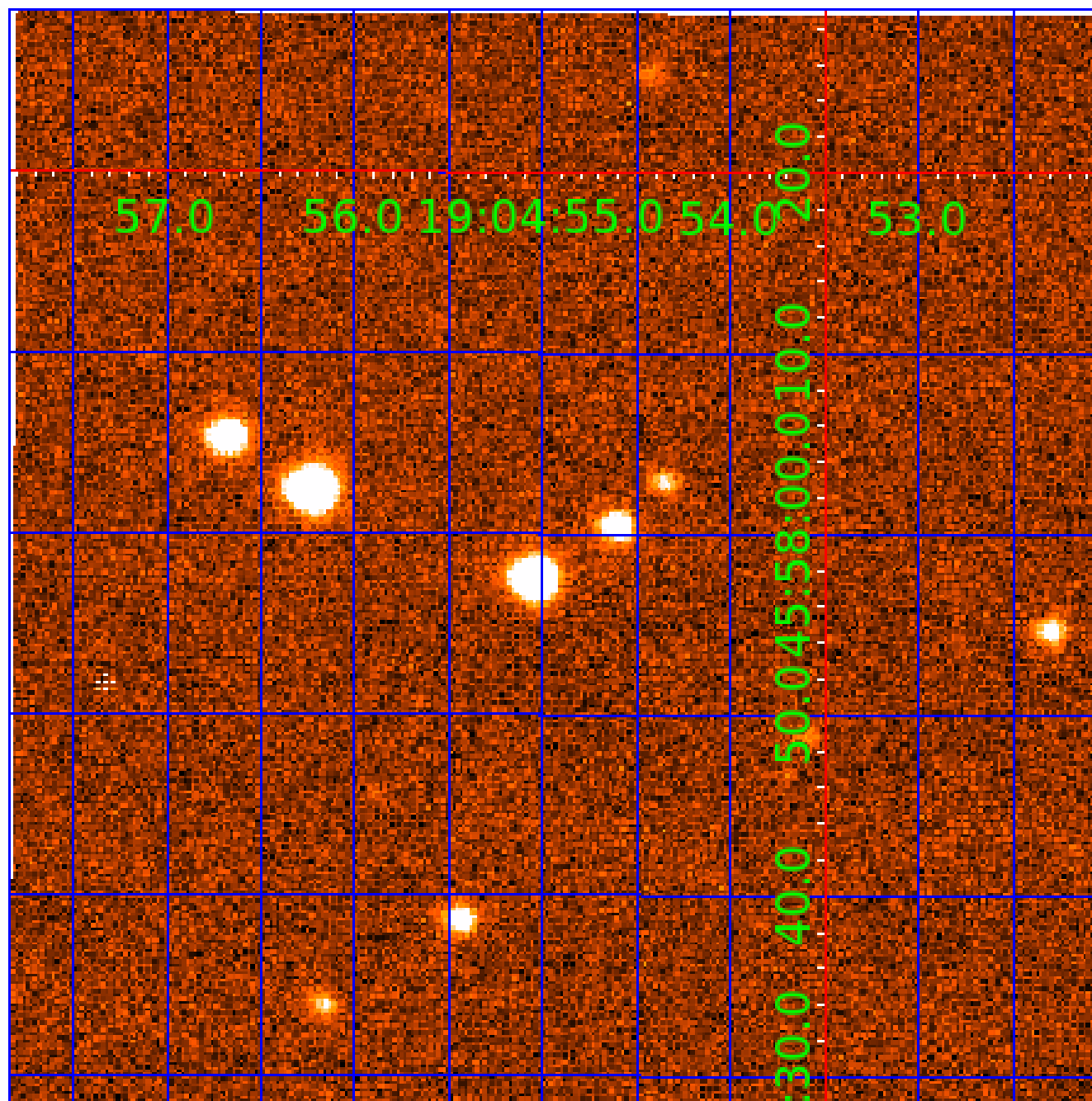


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009393006

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009393006-01	OBS	No	1.321269	132.535802	44.6	4.893	7.7	7.4	1.00	5780	0.66	1800.05
009393006-02	OBS	No	3.487834	132.373899	207.6	13.803	8.5	10.6	1.00	5780	2.11	493.40
009393006-03	OBS	No	149.630074	187.157870	802.9	14.505	15.1	6.8	1.00	5780	3.83	3.29
009393006-05	OBS	No	54.467839	132.774777	456.6	6.422	9.2	7.6	1.00	5780	2.23	12.64
009393006-06	OBS	No	78.059390	201.477510	632.6	5.368	9.7	8.0	1.00	5780	2.61	7.82
009393006-07	OBS	No	21.026194	140.546359	258.2	11.345	8.2	6.7	1.00	5780	1.74	44.97

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009393006-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_KIC_POS
009393006-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
009393006-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

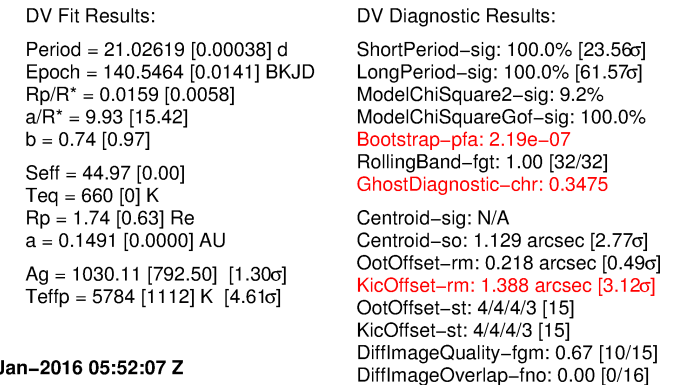
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

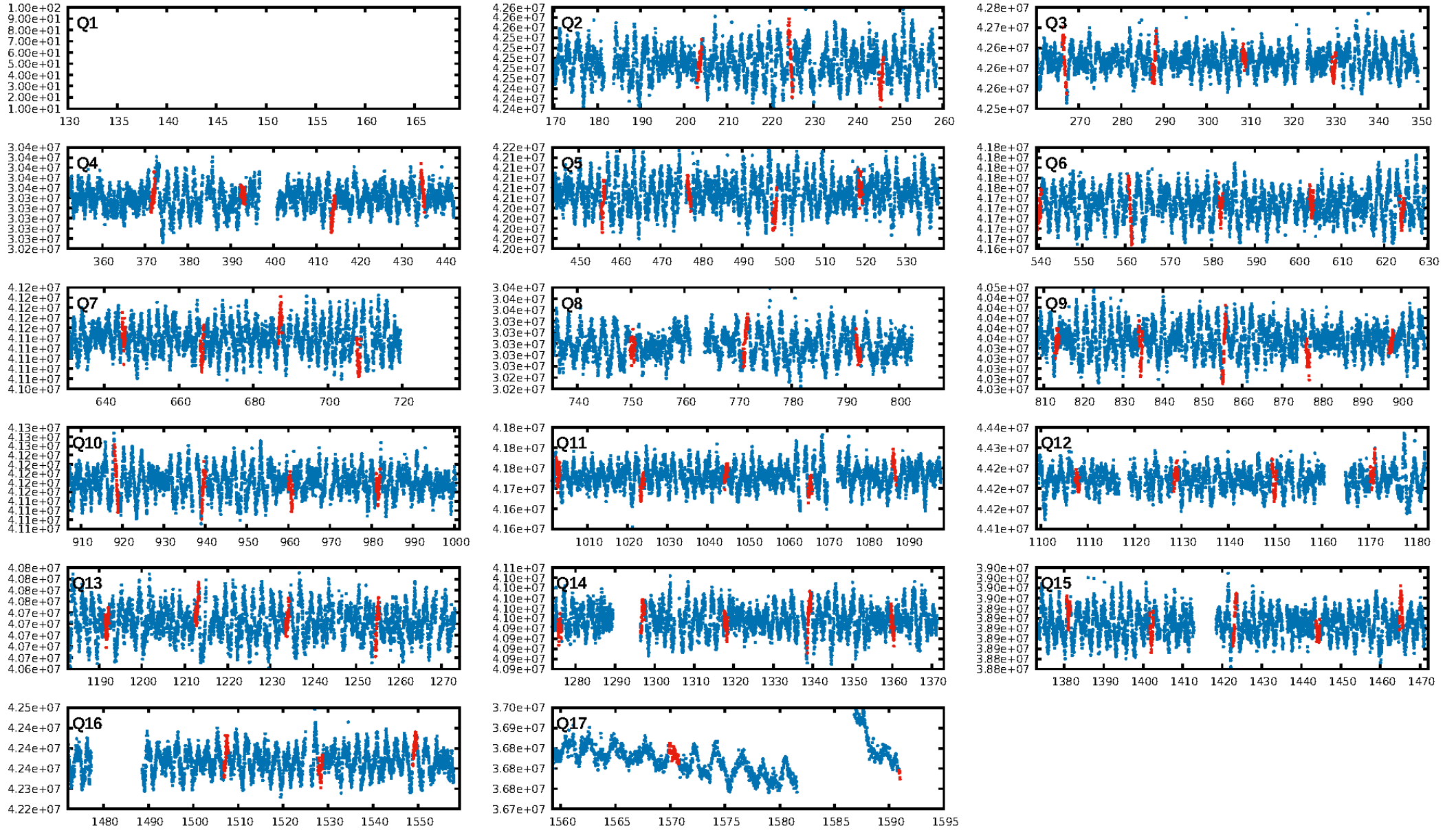
Ephemeris Match Information For 009393006-07

No Significant Match Found

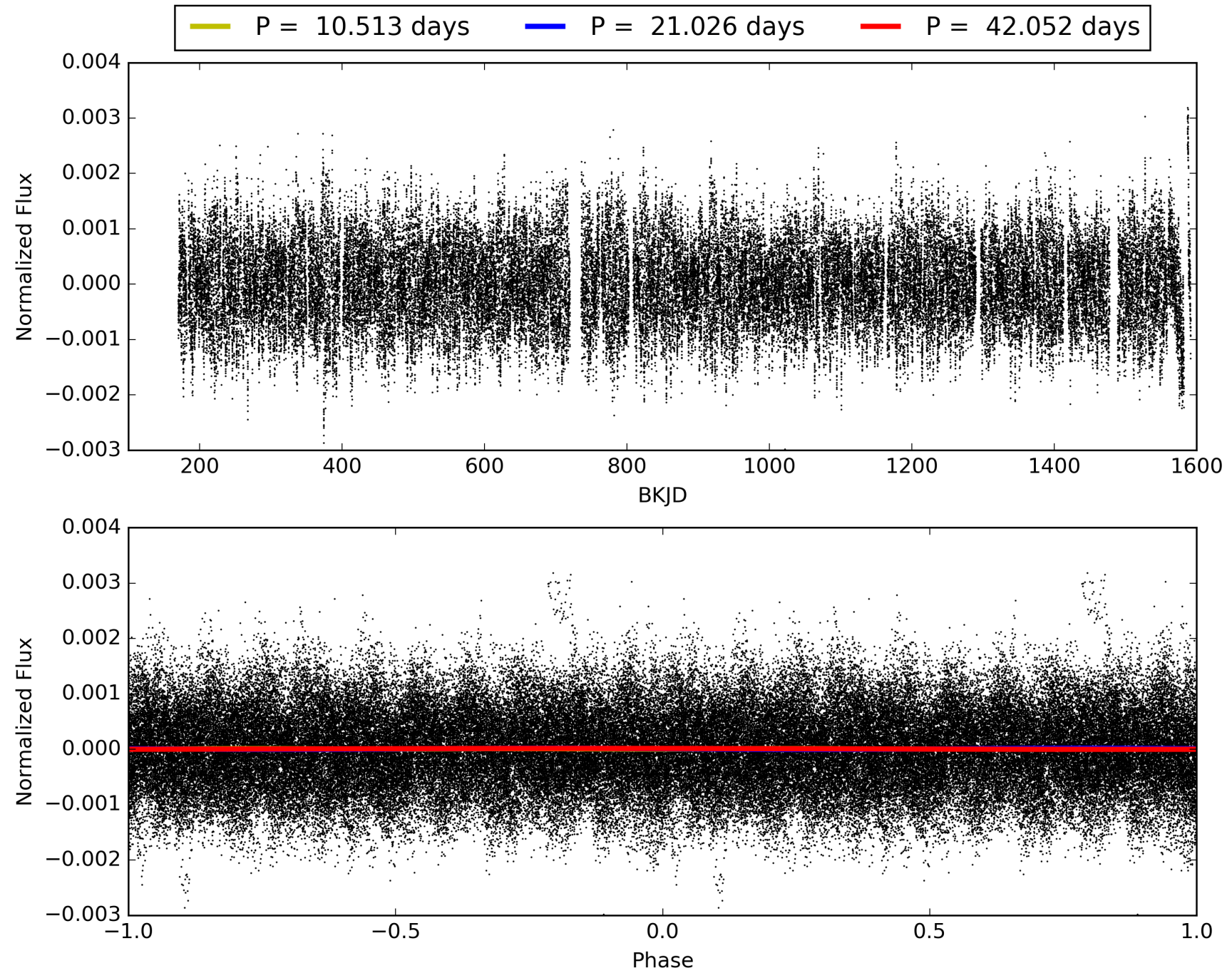
KIC: 9393006 Candidate: 7 of 8 Period: 21.026 d



TCE 009393006-07, PDC Light Curves

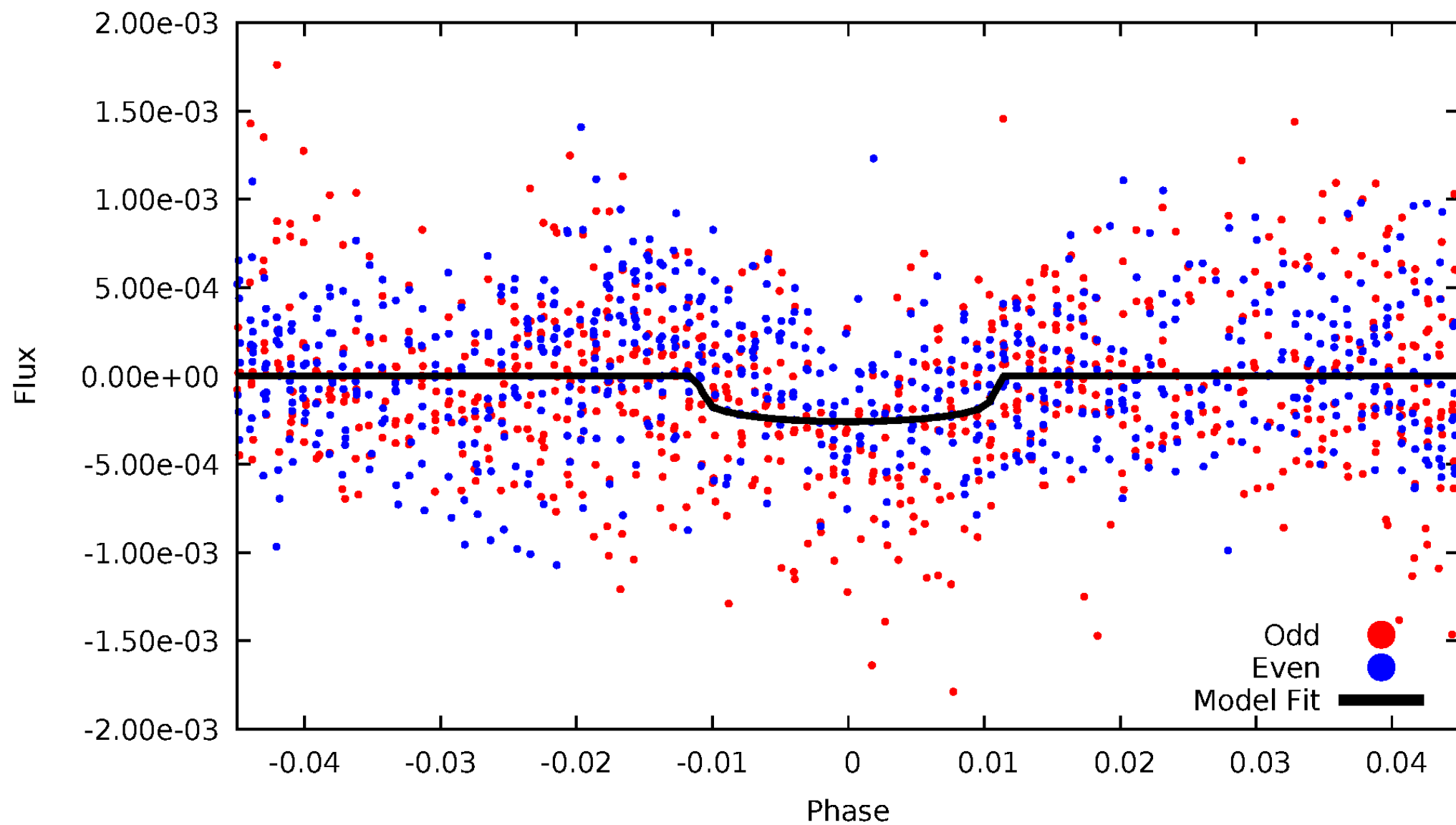


TCE 009393006-07



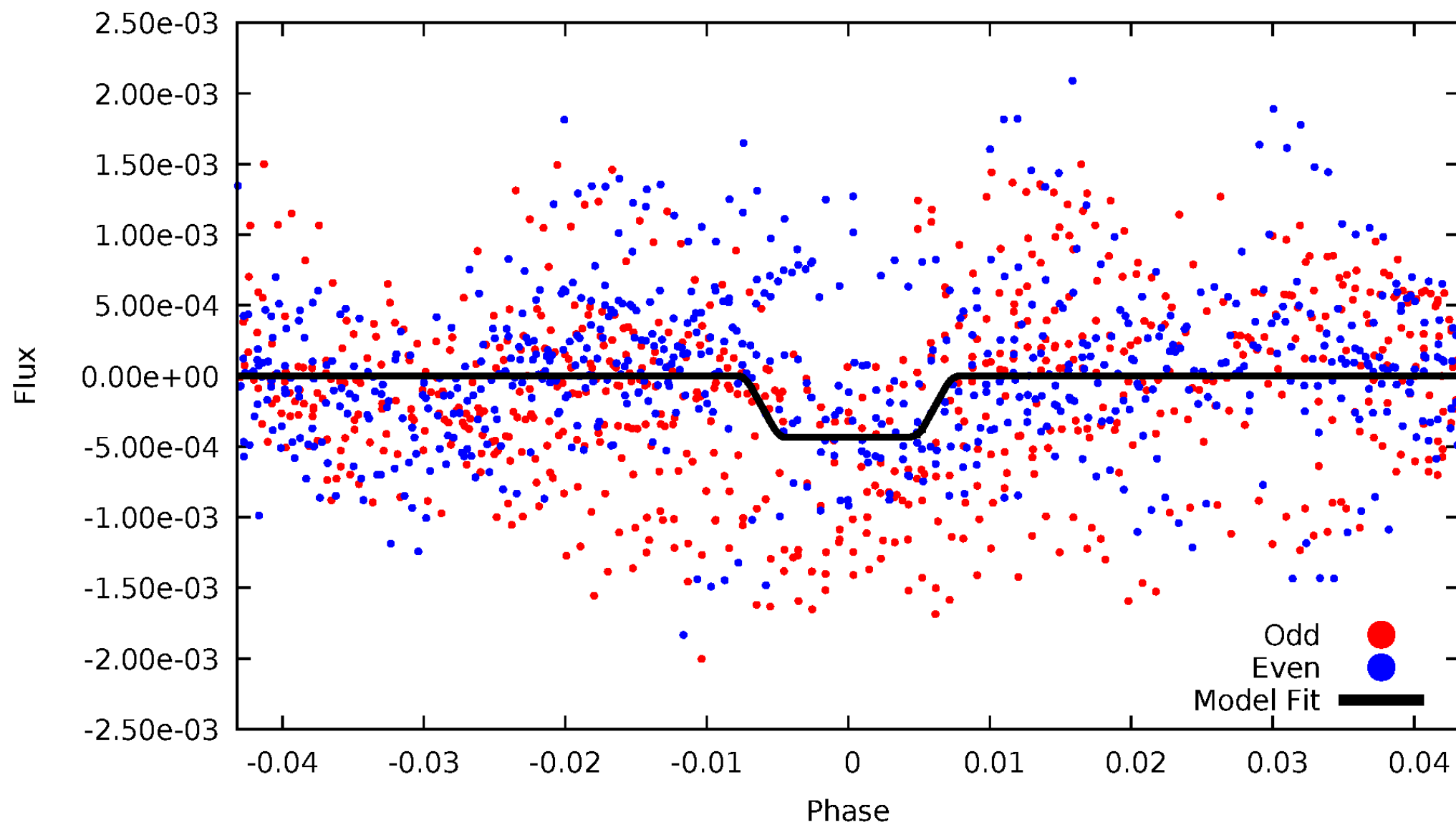
DV Odd/Even

TCE 009393006-07



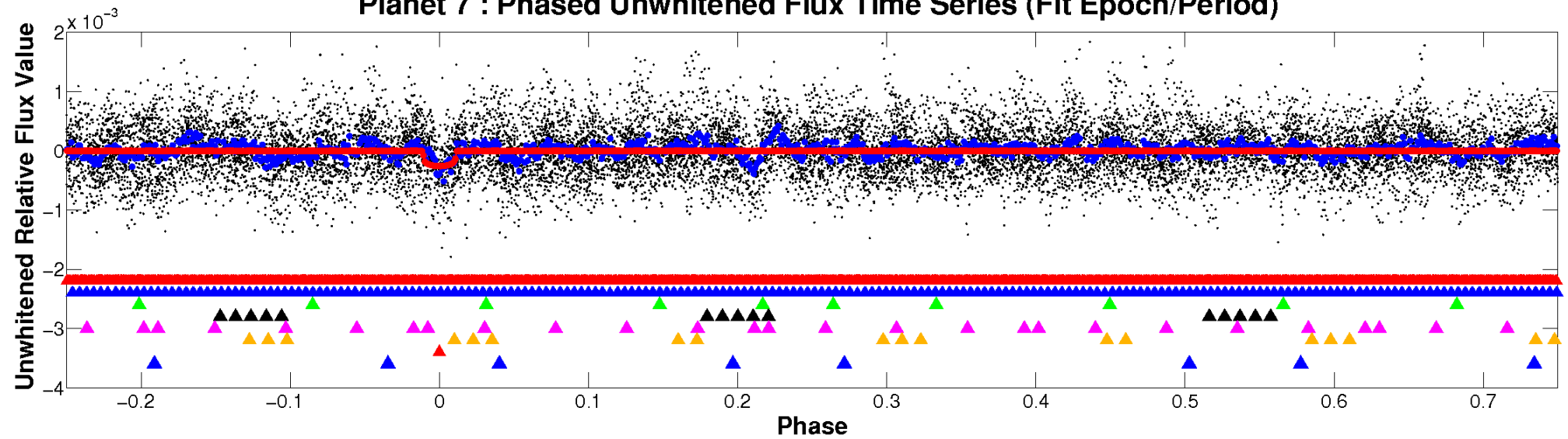
ALT Odd/Even

TCE 009393006-07

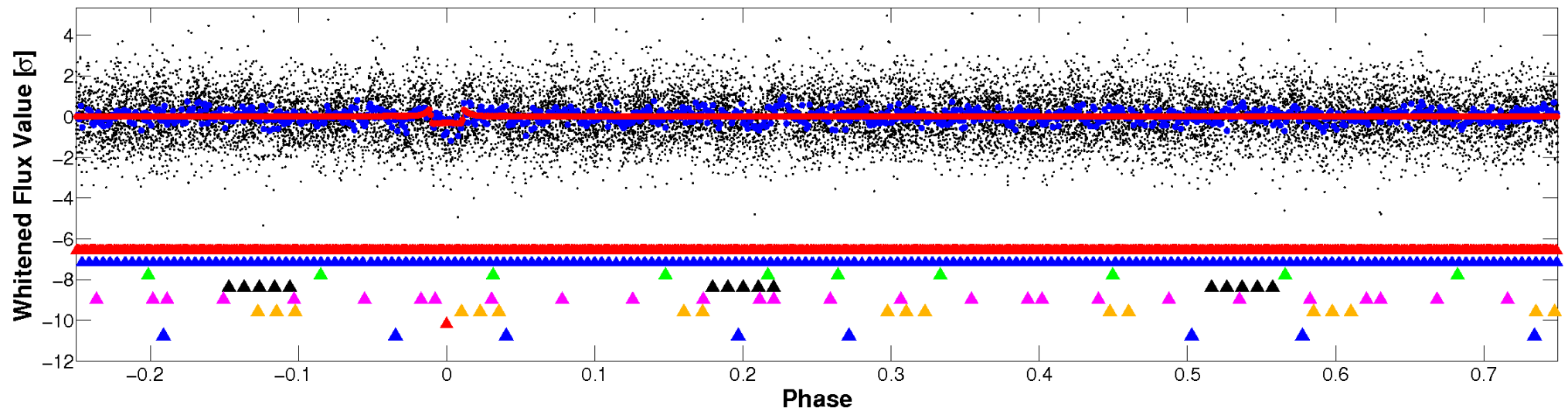


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

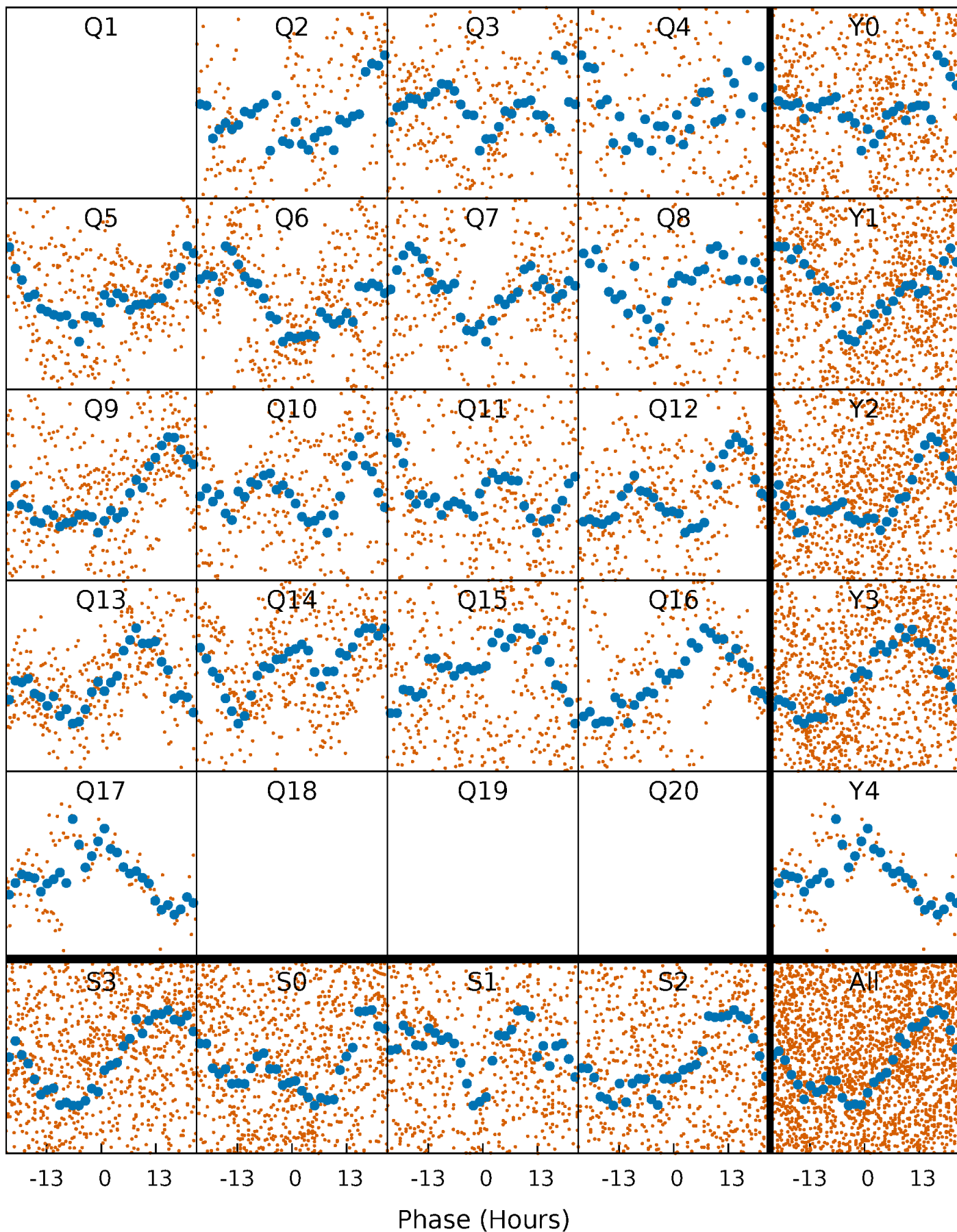


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



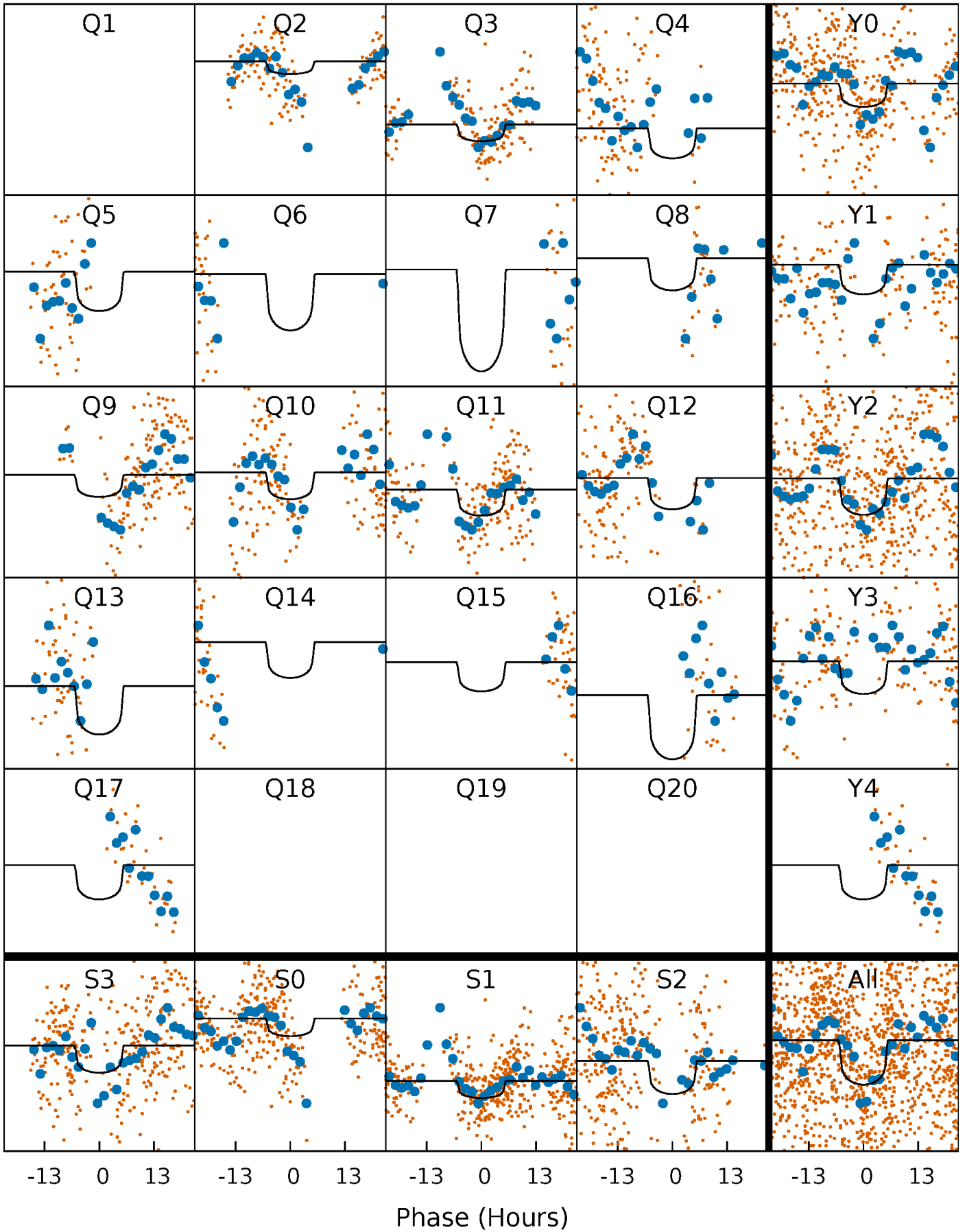
PDC Quarter-Phased Transit Curves

TCE 009393006-07 P= 21.026194 Days $T_0=140.546359$ (BKJD)



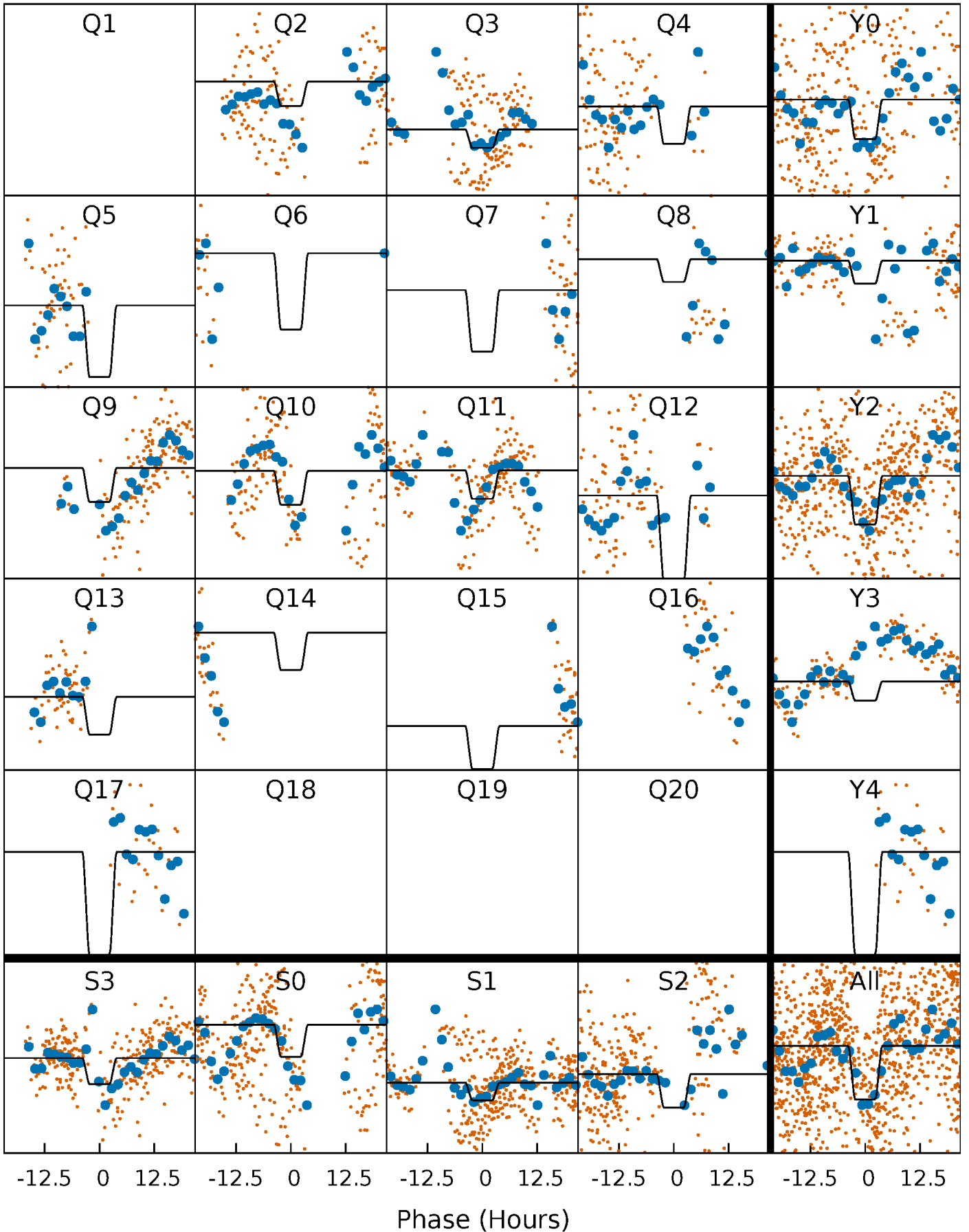
DV Quarter-Phased Transit Curves

TCE 009393006-07 $P = 21.026194$ Days $T_0 = 140.546359$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

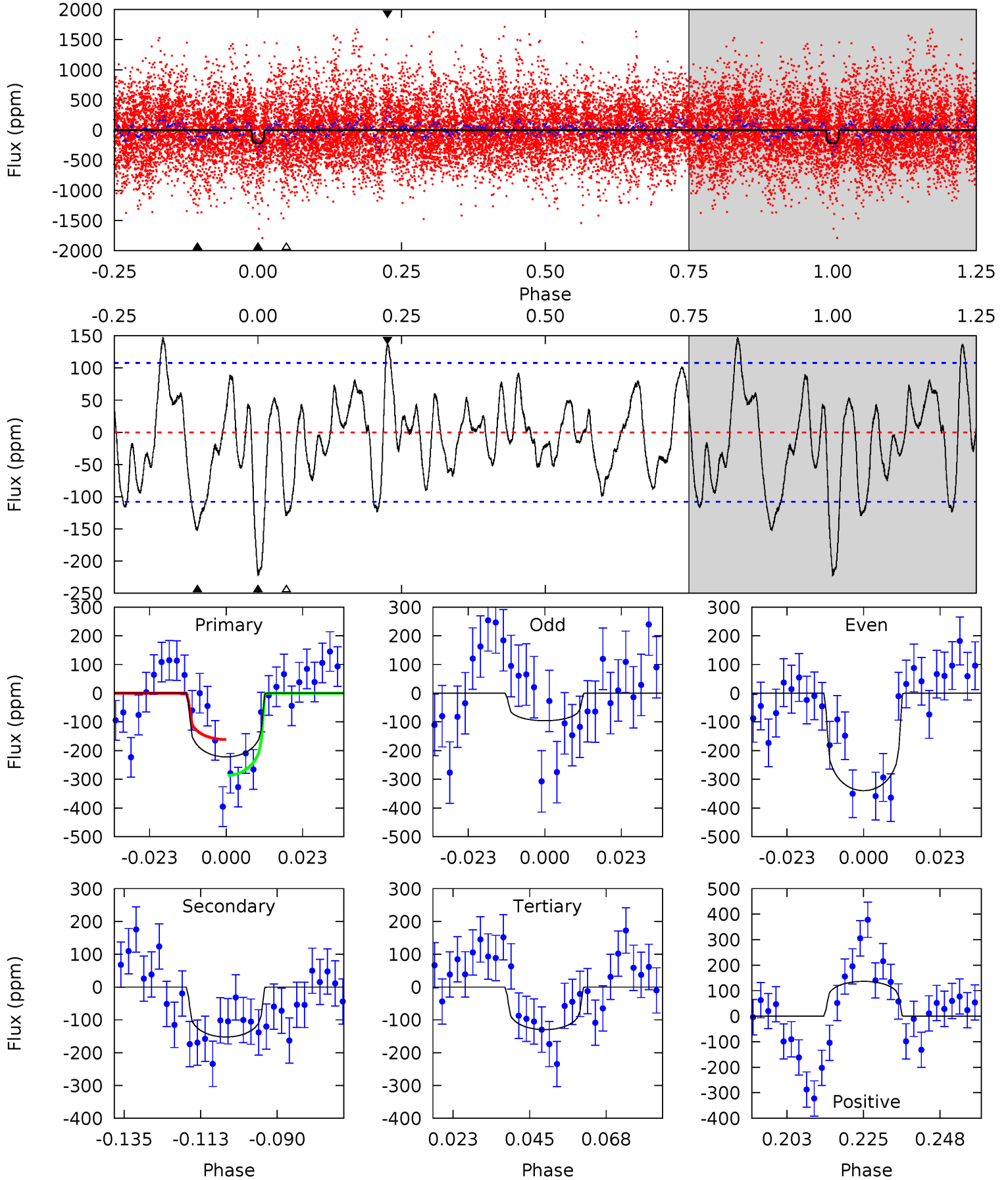
TCE 009393006-07 $P = 21.025216$ Days $T_0 = 140.584157$ (BKJD)



DV Model-Shift Uniqueness Test

009393006-07, P = 21.026194 Days, E = 140.546359 Days

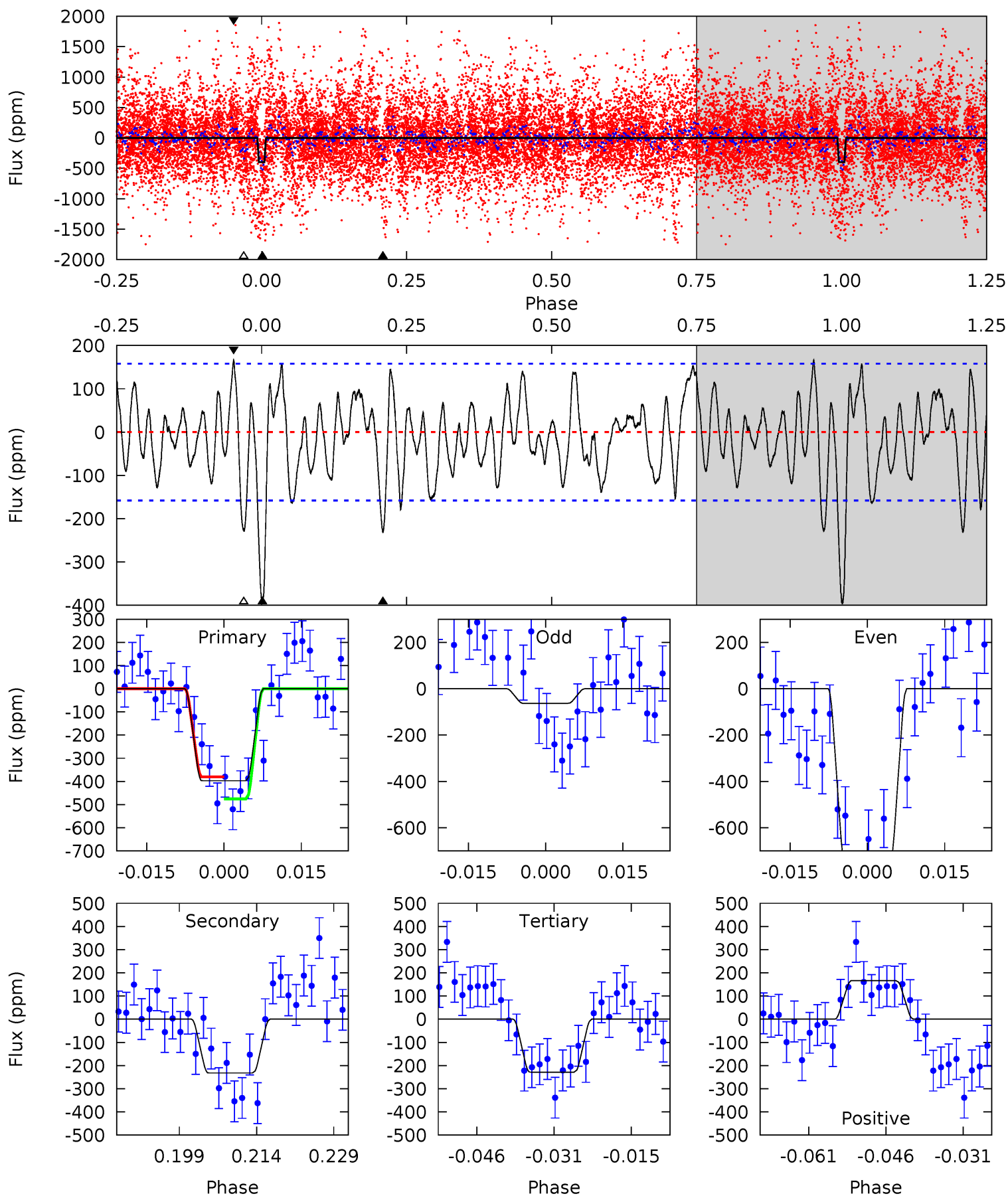
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.0	6.87	5.86	6.16	4.87	2.28	2.45	4.16	3.86	1.01	0.71	5.52	1.07	0.40	2.83



Alt Model-Shift Uniqueness Test

009393006-07, P = 21.025216 Days, E = 140.584157 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.4	7.27	7.16	5.21	4.94	2.43	2.27	5.28	7.23	0.11	2.06	10.7	1.25	0.30	1.49



Stellar Parameters For KIC 009393006

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009393006-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-152 ± 22	$1.75^{+0.66}_{-0.64}$	922^{+46}_{-43}	5118^{+1232}_{-660}	605^{+894}_{-291}
Alt.	-232 ± 32	$2.27^{+0.68}_{-0.65}$	926^{+46}_{-45}	5043^{+864}_{-523}	554^{+532}_{-230}

T_{max} = Theoretical Maximum Planetary Temperature
 T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)
 A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

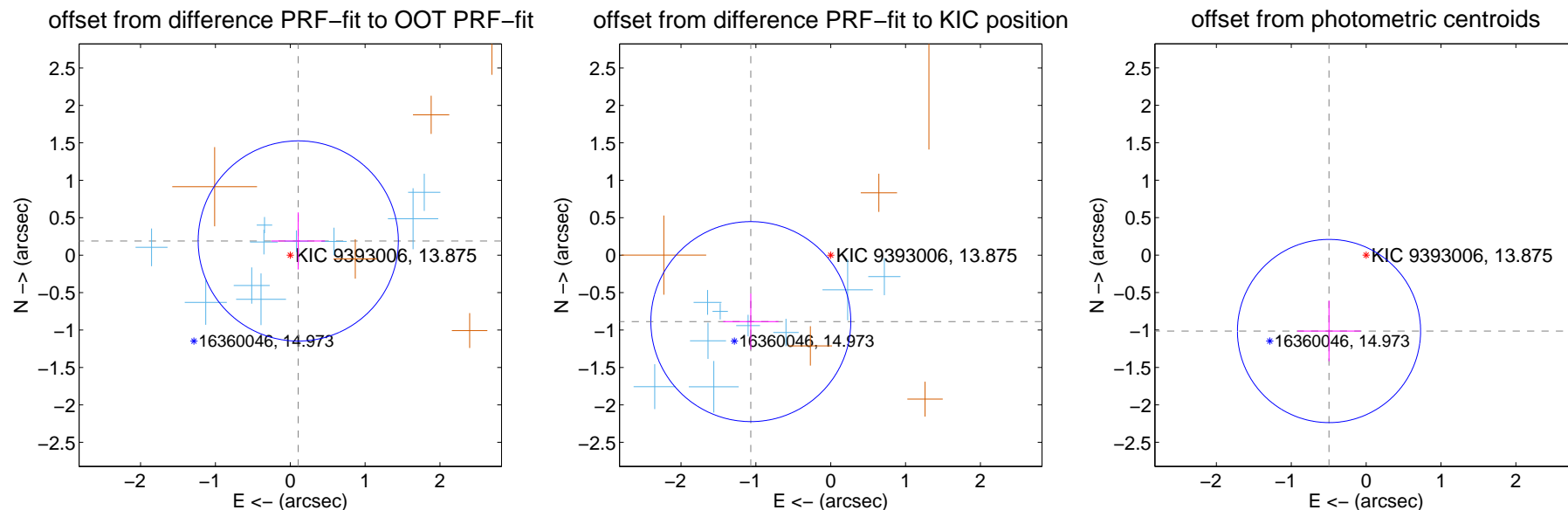
DV Centroid Data

Supplemental centroid analysis for 009393006-07. Kepler magnitude: 13.88. Transit SNR 6.65

There are 10 quarters with good PRF difference image offsets

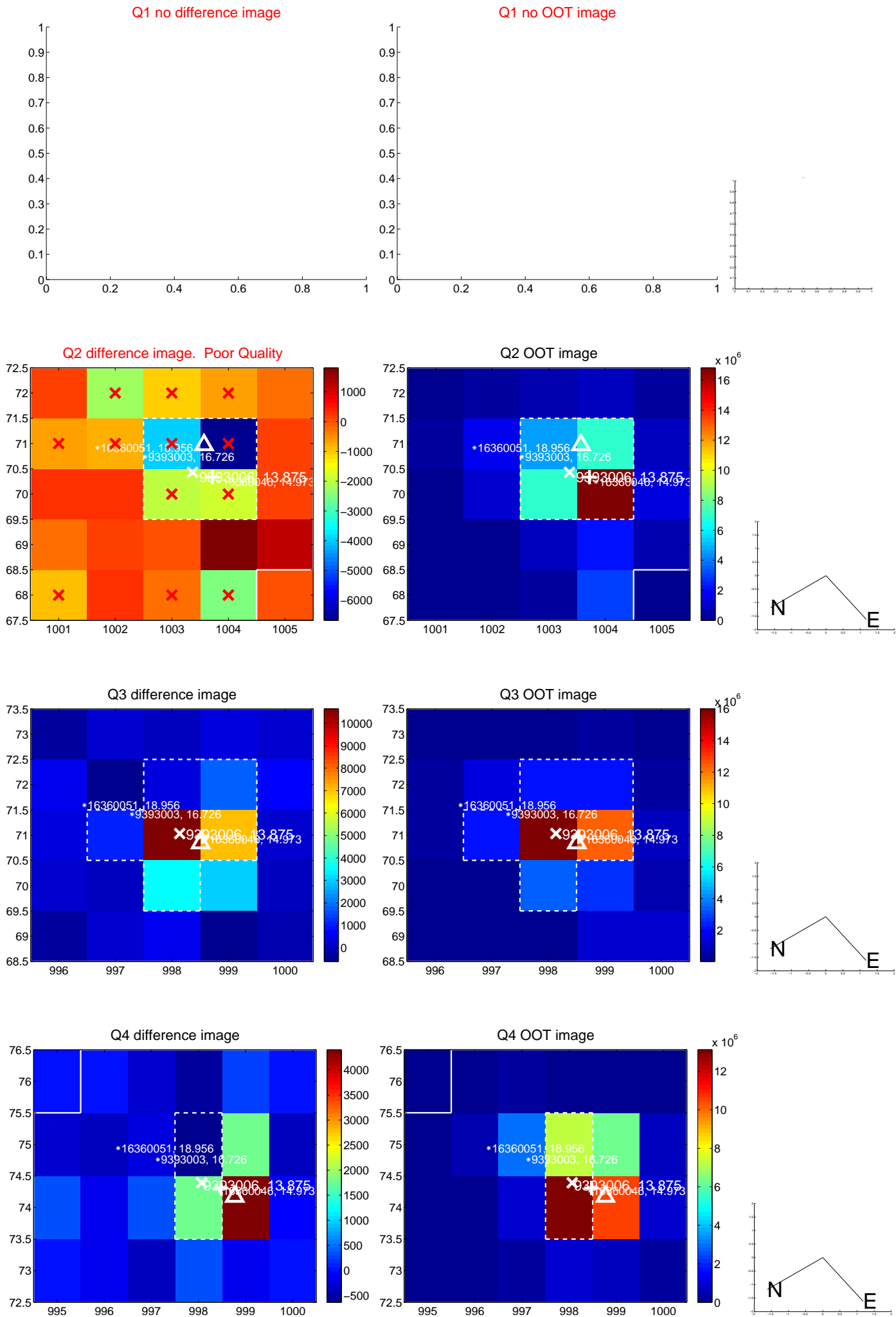
The direct PRF centroid is offset from the target star catalog position by about 1.62 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.218 ± 0.446	0.49	-0.107 ± 0.357	0.190 ± 0.382
PRF-fit source offset from KIC position	1.388 ± 0.445	3.12	1.068 ± 0.370	-0.888 ± 0.374
photometric centroid source offset	1.13 ± 0.41	2.77	0.50 ± 0.42	-1.01 ± 0.40

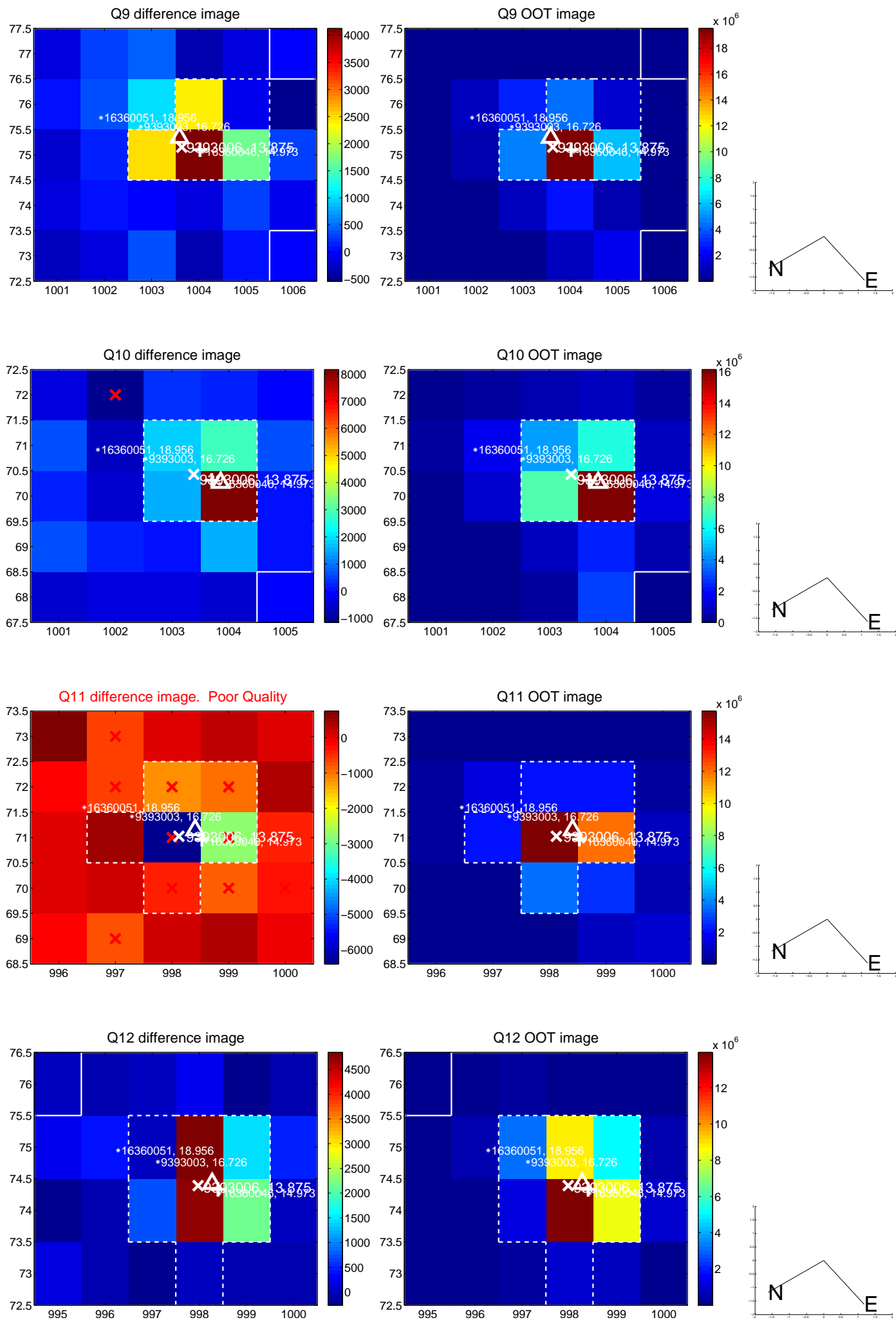


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

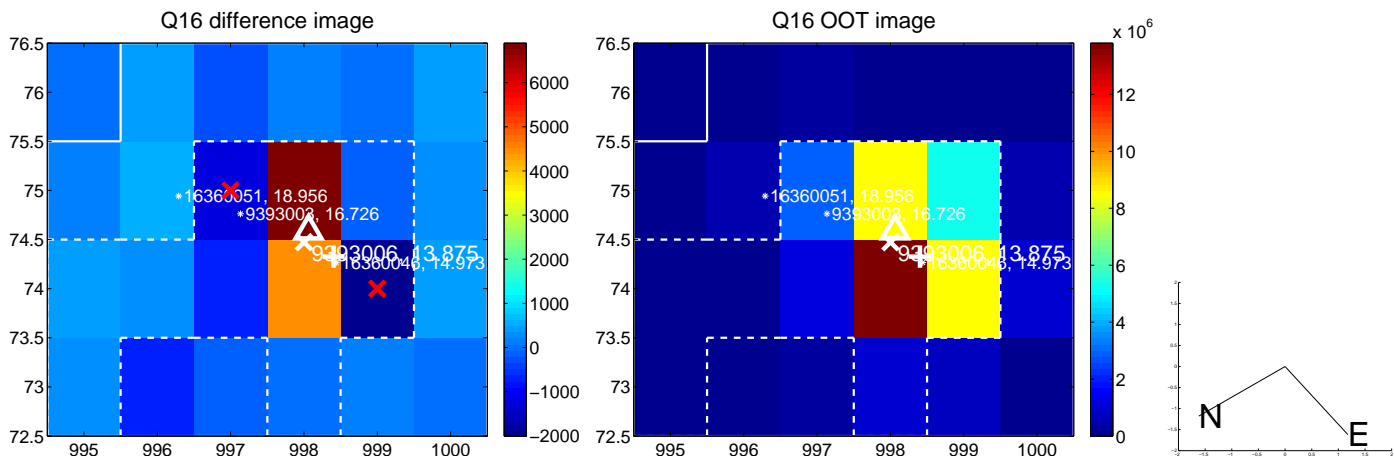
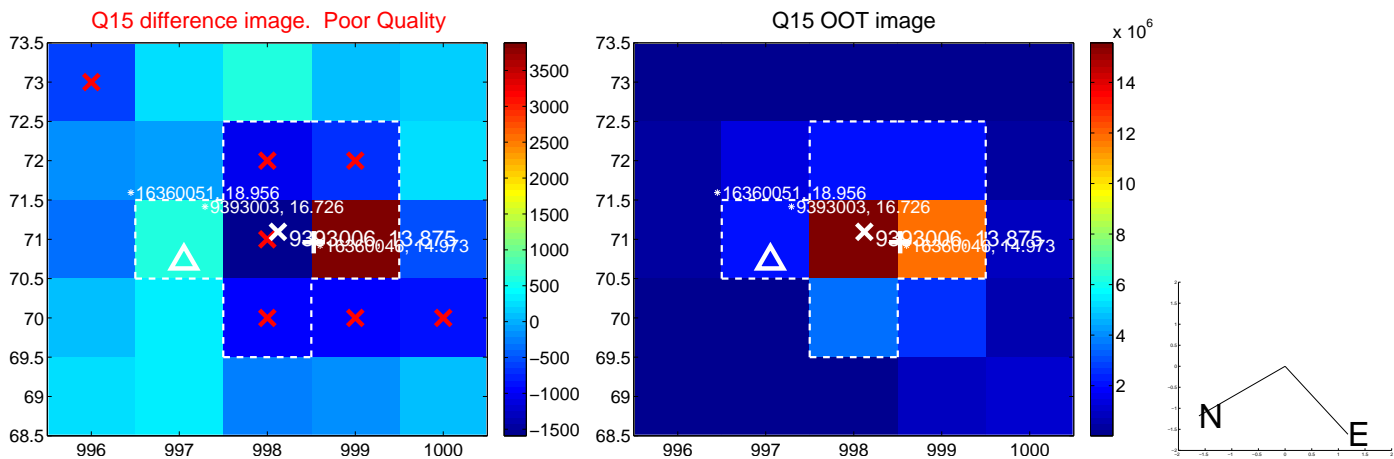
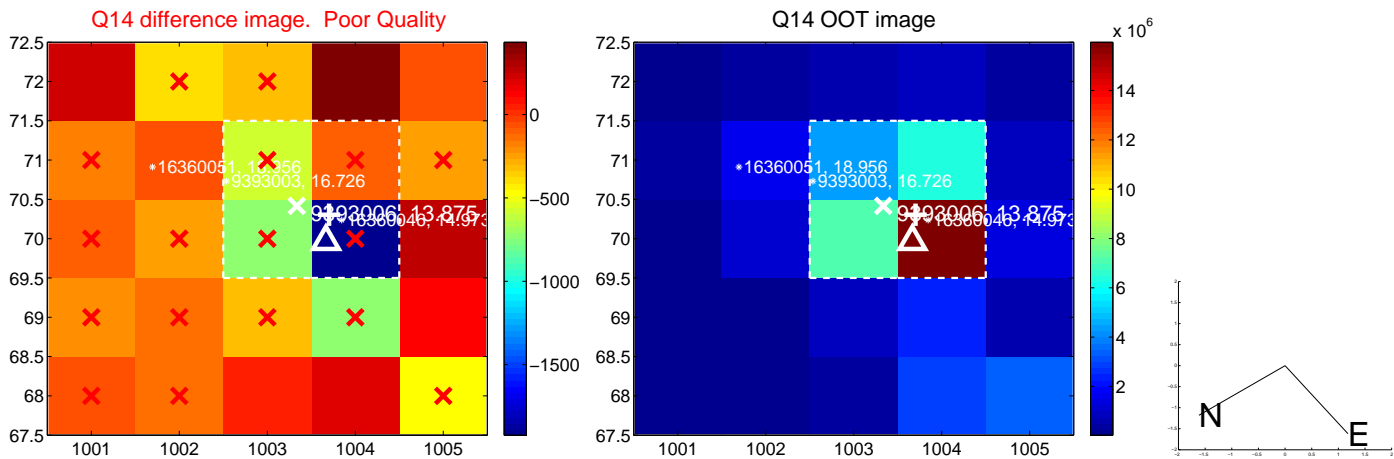
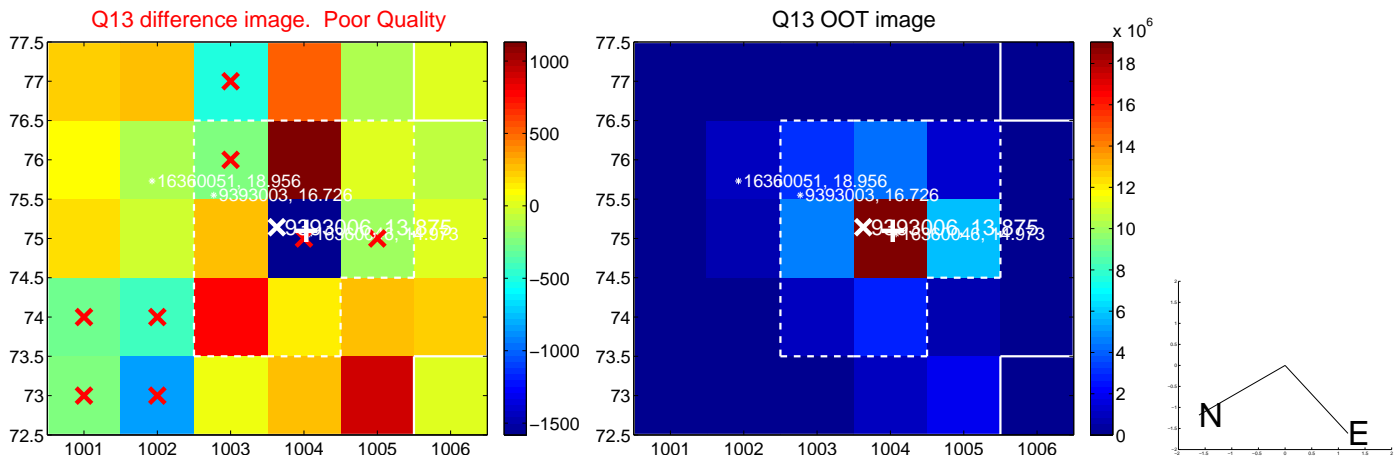
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



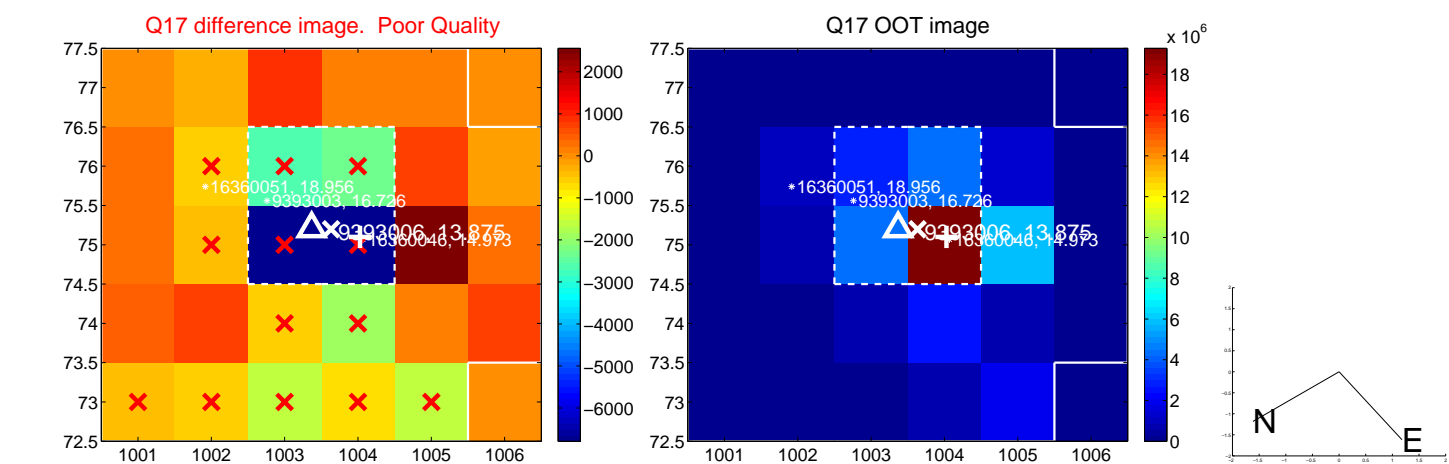
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



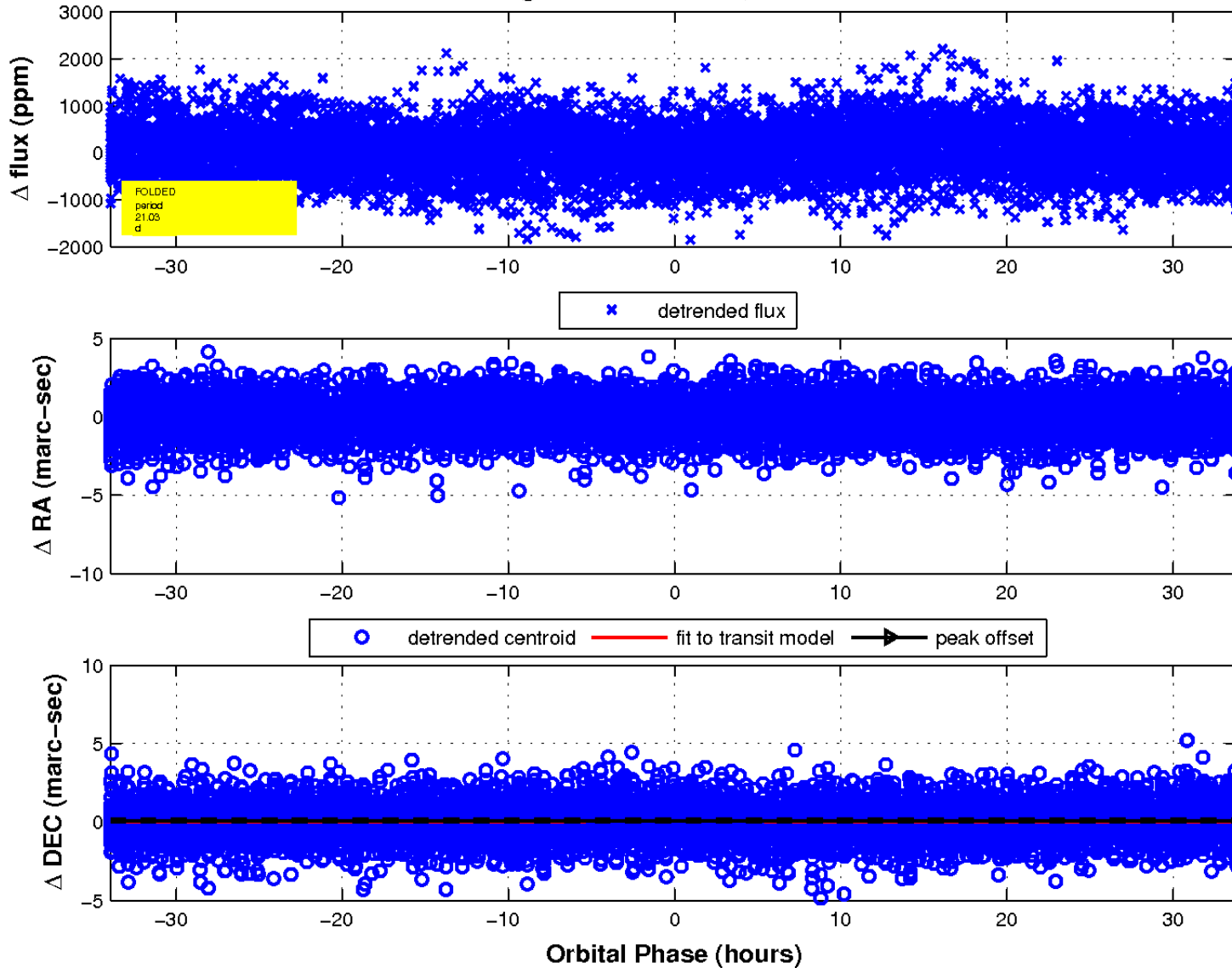
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 7 of 8



UKIRT Image

Declination

